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Evidenz- und konsensbasierte Indikationskriterien zur Hüfttotalendoprothese bei Coxarthrose

S3-Leitlinie der

Deutschen Gesellschaft für Orthopädie und Unfallchirurgie e.V. (DGOU)

Erstellt im Rahmen der Initiative Evidenz und konsensbasierte Indikation Totalendoprothese (EKIT-Hüfte)

Evidenz- und konsensbasierte Indikation Totalendoprothese EKIT-Hüfte

DGOU Deutsche Gesellschaft für Orthopädie und Unfallchirurgie

DEUTSCHE GESELLSCHAFT FÜR ENDOPROTHETIK

Leitlinienreport

Version: 1.0 (24.03.2021)

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Abkürzungsverzeichnis

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2nd ICM	Second International Consensus Meeting on Orthopedic Infections

A

AAHKS	American Association of Hip and Knee Surgeons
AAOS	American Academy of Orthopaedic Surgeons
ACR	American College of Rheumatology
AE	Deutsche Gesellschaft für Endoprothetik
AGA	Gesellschaft für Arthroskopie und Gelenkchirurgie
AkdÄ	Arzneimittelkommission der deutschen Ärzteschaft
AMSTAR	A Measurement Tool for the Assessment of Multiple Systematic Reviews
ap	anterior–posterior
ARCO	Association Research Circulation Osseous
ASB	asymptomatische Bakteriurie, asymptomatic bacteriuria
ATL	Aktivitäten des täglichen Lebens
AWMF	Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften

B

BMI	Body Mass Index
BOA	British Orthopaedic Association
BVOU	Berufsverband für Orthopädie und Unfallchirurgie
bzw.	beziehungsweise

C

CI	Confidence interval
CMA	Canadian Medical Association
CRD HTA	Centre for Reviews and Dissemination Health Technology Appraisals database
CT	Computertomographie

D

d.h.	das heißt
DEGAM	Deutsche Gesellschaft für Allgemeinmedizin und Familienmedizin
DELBI	Deutsches Leitlinienbewertungsinstrument
DGAI	Deutschen Gesellschaft für Anästhesiologie und Intensivmedizin
DGMP	Deutsche Gesellschaft für Medizinische Psychologie
DGOOC	Deutsche Gesellschaft für Orthopädie und Orthopädische Chirurgie
DGORh	Deutsche Gesellschaft für Orthopädische Rheumatologie
DGOU	Deutsche Gesellschaft für Orthopädie und Unfallchirurgie
DGP	Deutsche Gesellschaft für Pflegewissenschaft
DGPRM	Deutsche Gesellschaft für Physikalische und Rehabilitative Medizin
DGPSF	Deutsche Gesellschaft für Psychologische Schmerztherapie und -forschung
DGPTW	Deutsche Gesellschaft für Physiotherapiewissenschaft
DGRh	Deutsche Gesellschaft für Rheumatologie
DGU	Deutsche Gesellschaft für Unfallchirurgie
DHG	Deutsche Hüftgesellschaft

DNVF	Deutsches Netzwerk Versorgungsforschung
DSM	Diagnostic and Statistical Manual of Mental Disorders

E

e.g.	exempli gratia, for example
e.V.	eingetragener Verein
EK	Expertenkonsens
EKIT-Hüfte	Evidenz- und konsensbasierte Indikationskriterien für die Hüfttotalendoprothese
engl	englisch
EPO	Erythropoetin
EPRD	Endoprothesenregister Deutschland
EQ-5D	European Quality of Life 5 Dimensions
ESA	Erythropoiesis-stimulating agents
EULAR	European League Against Rheumatism

G

ggf.	gegebenenfalls
G-I-N	Guidelines International Network
GRADE	Grading of Recommendations, Assessment, Development and Evaluation

H

HHS	Harris Hip Score
HOOS	Hip Disability and Osteoarthritis Outcomes Score
HOOS-JR	Hip Disability and Osteoarthritis Outcomes Score Joint Replacement
HOOS-PS	Hip Disability and Osteoarthritis Outcomes Score Physical Function
Hüft-TEP	Hüfttotalendoprothese

I

IACI	intraartikulären Injektion von Cortikosteroiden
ICD	International Statistical Classification of Diseases and Related Health Problems
ICHOM	International Consortium for health Outcomes Measurements
ICSI	Institute for Clinical Systems Improvement

K

Knie-TEP	Knietotalendoprothese

M

MA	Meta-Analyse, meta-analysis
Minors	Methodological index for non-randomized studies
MRI	Magnetic Resonance Imaging
MRT	Magnetresonanztomografie

N

NGC	National Guideline Clearinghouse
NHMRC	New Zealand Guidelines Group National Health and Medical Research Council
NICE	National Institute for Health and Clinical Excellence

NOS Newcastle Ottawa Scale
NRS Numerische Rating Skala
NZOA New Zealand Orthopaedic Association

O

o.ä. oder ähnliches
OA Ostheoarthritis
OARSI Osteoarthritis Research Society International
OECD Organisation für wirtschaftliche Zusammenarbeit und Entwicklung
OHS Oxford Hip Score
OMERACT Outcome Measures in Rheumatology
OUPC UniversitätsCentrum für Orthopädie, Unfall- & Plastische Chirurgie

P

PaRIS Patient-Reported Indicator Surveys
PJI periprothetische Infektionen, Periprosthetic Joint Infection
PROM Patient-Reported Outcome Measures
PROMIS-10 Patient-Reported Outcomes Measurement Information System 10 Items

R

RACGP The Royal Australian College of General Practitioners
RCT Randomised controled trial
RR relatives Risiko

S

SF Short Form Health Survey
SIGN Scottish Intercollegiate Guidelines Network
SMD Standardized mean difference
SR systematisches Review, systematic review
SSI Surgical Site Infection

T

THA Total hip arthroplasty
TJR Total joint replacement
TKR Total knee replacement
TU Technische Universität

U

u./o. und / oder
US Ultraschall, Ultrasound

V

VAS Visuelle Analog Skala
vdek *Verband der Ersatzkassen*
VR-12 Veterans RAND 12
VTE Venenthrombose, Venous thromboembolism

W

WHO	Weltgesundheitsorganisation, World Health Organization
WMD	Weighted mean difference
WOMAC	Western Ontario and McMaster Universities Osteoarthritis Index

Z

z.B.	zum Beispiel
ZEGV	Zentrum für Evidenzbasierte Gesundheitsversorgung

1 Informationen zum Leitlinienreport

1.1 Autor*innen des Leitlinienreports

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Universitätsklinikum Carl Gustav Carus Dresden, TU Dresden

1.2 Herausgeber

Deutsche Gesellschaft für Orthopädie und Unfallchirurgie e.V. (DGOU)

1.3 Federführende Fachgesellschaft der Leitlinie

Deutsche Gesellschaft für Orthopädie und Unfallchirurgie e.V. (DGOU)

1.4 Finanzierung der Leitlinie

Die Leitlinien-Initiative „Evidenz- und konsensbasierte Indikationskriterien für die Hüfttotalendoprothese (EKIT-Hüfte)“ wurde finanziell unterstützt von der Stiftung Endoprothetik, Hamburg. Die Stiftung Endoprothetik unterstützte im Zeitraum 01.01.2019 bis 31.10.2020 mit Personalmitteln (0,6 Personalstelle wissenschaftlicher Mitarbeiter über 22 Monate) und Sachmitteln (Software-Lizenz der Ärzte- und Patientenbefragungen). Weitere anfallende Personal- und Sachkosten wurden vom OUPC und ZEGV (Universitätsklinikum Carl Gustav Carus Dresden, TU Dresden) übernommen. Die Reisekosten wurden durch die Teilnehmer*innen der Initial- und Abschlusskonferenz getragen. Die Erarbeitung der Leitlinie erfolgte in redaktioneller Unabhängigkeit von der finanzierenden Organisation.

1.5 Kontakt

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1.6 Zitierweise des Leitlinienreports

Deutschen Gesellschaft für Orthopädie und Unfallchirurgie e.V. (DGOU): Evidenz- und konsensbasierte Indikationskriterien zur Hüfttotalendoprothese bei Coxarthrose (EKIT-Hüfte). Leitlinienreport. Version 1.0 (24.03.2021). Verfügbar unter: https://www.awmf.org/leitlinien/detail/ll/187-001.html, Zugriff am (Datum).

1.7 Weitere Dokumente zur Leitlinie

Die Leitlinie liegt als Lang- und Kurzversion vor. Eine Patient*innenversion der Leitlinie (Laienversion der Leitlinie) ist in Vorbereitung.

2 Geltungsbereich und Zweck

2.1 Zielsetzung

Begründung für die Auswahl des Leitlinienthemas

Es handelt sich um eine gesundheitsökonomisch relevante Fragestellung bei einem der häufigsten Eingriffe in Orthopädie und Unfallchirurgie. Bisher existieren verbindliche Leitlinien zur Therapie der Coxarthrose, jedoch keine expliziten und verbindlichen Empfehlungen für die Indikationsstellung zur Hüfttotalendoprothese (Hüft-TEP). Die Anwendung von Indikations- bzw. Kontraindikationskriterien unterstützt dabei, die Patient*innensicherheit und Versorgungsqualität zu verbessern sowie Versorgungsgerechtigkeit zu ermöglichen.

Zielorientierung der Leitlinie

Die Leitlinie soll Ärzt*innen bei der Indikationsstellung für eine Hüft-TEP-Operation unterstützen, zu einer besseren Information von Patient*innen beitragen, eine partizipative Entscheidungsfindung erleichtern und damit zur Sicherstellung einer bedarfs- und versorgungsgerechten Patient*innenversorgung beitragen.

Die Autor*innen und Herausgeber*innen der Leitlinie haben Fragestellungen zu den folgenden Themenkomplexen beantwortet

- Diagnosesicherung (Sicherung des objektiven Therapiebedarfs)
- Leidensdruck der Patient*innen (Erfassung des subjektiven Therapiebedarfs)
- Prüfung alternativer Therapiemaßnahmen (Prüfung der Zweckmäßigkeit)
- Kontraindikationen
- Optimierung modifizierbarer Risikofaktoren
- Partizipative Entscheidungsfindung.

2.2 Adressat*innen

Patient*innenzielgruppe

Die Patient*innenzielgruppe dieser Leitlinie sind Patient*innen mit einer Coxarthrose, bei denen die Indikation einer Hüft-TEP-Operation abgeklärt werden soll.

Versorgungsbereich

Der Versorgungsbereich bei einer Coxarthrose umfasst die ärztliche Versorgung im ambulanten und stationären Bereich. Die Diagnostik und erste konservative Behandlungen finden grundsätzlich im ambulanten Bereich statt. Bei Fortschreiten der Erkrankung wird zunächst im ambulanten Bereich die Indikation einer operativen Therapie geprüft. Die endgültige Indikationsstellung und Durchführung der elektiven Operation finden fast ausschließlich im stationären Bereich statt. Die vorliegende Leitlinie bezieht sich auf die im DRG-System verschlüsselten Diagnosen für Coxarthrose (ICD-10 Code M16) und Hüftkopfnekrose (ICD-10 M87).

Anwender*innzielgruppe/Adressat*innen

Die Leitlinie richtet sich an die Mitglieder der beteiligten orthopädisch-unfallchirurgischen Fachgesellschaften (DGOU, DGOOC, DGU, AE, DHG, BVOU, DGORh, AGA) und verwandter medizinischer Fachgesellschaften (DGRh, DGPRM, DEGAM, Deutsche Schmerzgesellschaft, DGPSF, DGP, DGPTW, DNVF und Deutsche Gesellschaft für Medizinische Psychologie) sowie an die Mitglieder der Deutschen Rheuma-Liga und der Deutschen Arthrose-Hilfe, an die Krankenkassen (BARMER GEK, vdek, AOK-Bundesverband, AOK PLUS) und Patient*innen.

Sie dient zur Information für alle Ärzt*innen und nicht-ärztlichen Versorger*innen im Gesundheitssystem, die Patient*innen mit einer Coxarthrose behandeln (Orthopäd*innen, Unfallchirurg*innen, Allgemeinmediziner*innen, Physiotherapeut*innen, Pflegekräfte, etc.). Weiterhin dient sie der Information betroffener Patient*innen sowie deren Angehörige. Darüber hinaus soll sie Kostenträger*innen und politischen Entscheidungsträger*innen Orientierung geben.

2.3 Gültigkeitsdauer und Aktualisierungsverfahren

Die S3-Leitlinie ist bis zur nächsten Aktualisierung gültig. Die nächste Aktualisierung ist nach fünf Jahren geplant, d.h. im Jahr 2025. Bei dringendem Änderungsbedarf kann eine neue Version früher erstellt werden. Kommentare und Hinweise für den Aktualisierungsprozess sind ausdrücklich erwünscht und können an das Leitliniensekretariat adressiert werden:

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01309 Dresden
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3 Zusammensetzung der Leitliniengruppe

3.1 Koordinations- und Steuergruppe der Leitlinie

Die Koordinations- und Steuergruppe dieser Leitlinie stellt das EKIT-Studienteam dar. Im Folgenden wird einheitlich der Begriff EKIT-Studienteam verwendet.

Dieses setzt sich wie folgt zusammen:

- Leitlinienkoordinator: Prof. Dr. med. Klaus-Peter Günther (Dresden, Orthopäde und Unfallchirurg)
- Wissenschaftlicher Leiter: Prof. Dr. med. Jochen Schmitt (Dresden, Methodiker)
- Wissenschaftliche Leiterin: PD Dr. med. Anne Postler (Dresden, Orthopädin und Unfallchirurgin)
- Dr. rer. medic. Cornelia Lützner (Dresden, Wissenschaftlerin, Leitliniensekretariat)
- Stefanie Deckert, MPH (Dresden, Methodikerin seit Juli 2020)
- Toni Lange, MPH, MSc (Dresden, Methodiker)
- Prof. Dr. med. Jörg Lützner (Dresden, Orthopäde und Unfallchirurg)
- Dr. med. Natascha Einhart (Dresden, Methodikerin bis Juni 2020).

Aufgaben, die vom EKIT-Studienteam im Rahmen der Leitlinienerstellung übernommen wurden, umfassten:

- Ausarbeitung des medizinisch-wissenschaftlichen Kenntnisstandes zu allen Themen der Leitlinie
- Einhaltung der methodischen Vorgaben lt. AWMF-Regelwerk (1)
- Zusammenfassung der Evidenz in Form von Evidenztabellen, Leitliniensynopsen und Hintergrundtexten sowie Ableitung vorläufiger Empfehlungen
- Präsentation der Fragestellungen nach der ersten Konsenskonferenz (konstituierendes Auftakttreffen am 21.06.2017) im Zuge der Leitlinienarbeit
- Präsentation der Kernaussagen und vorläufigen Empfehlungen auf der zweiten Konsenskonferenz (Abschlusskonferenz am 21.9.2020)
- Finalisierung des Leitlinientextes in Abstimmung mit den beteiligten Fachgesellschaften und Organisationen.

3.2 Beteiligte Fachgesellschaften und Organisationen

Federführende Fachgesellschaft bei der Leitlinienerstellung ist die Deutsche Gesellschaft für Orthopädie und Unfallchirurgie e.V. (DGOU). Herausgeber der Leitlinie ist ebenfalls die DGOU.

Jede beteiligte Fachgesellschaft und Arbeitsgemeinschaft hat eine*n Mandatsträger*in benannt, die schriftlich vom jeweiligen Vorstand bestätigt wurden; ggf. wurden Vertreter*innen benannt.

Die Stimmberechtigungen wurden im Rahmen der Konsenskonferenz abgestimmt und verabschiedet. Die in Tabelle 2 aufgeführten Kassenvertreter*innen haben gleichwertig über die Empfehlungen abgestimmt. Dies wurde durch die Mandatsträger*innen mit 79% Zustimmung abgestimmt.

In Tabelle 1 sind die 21 an der Leitlinienerstellung beteiligten und stimmberechtigten medizinischen Fachgesellschaften und sonstigen Organisationen sowie deren Mandatsträger*innen aufgeführt.

*Tabelle 1: Beteiligte Fachgesellschaften und Organisationen (sortiert nach Mandatsträger*innen in alphabetischer Reihenfolge)*

Mandatsträger*innen	Fachgesellschaft/Organisation	Zeitraum
Prof. Dr. med. Martin Aringer	Deutsche Gesellschaft für Rheumatologie, DGRh	ab 06/2017
Prof. Dr. med. habil. Antje Bergmann Dr. med. Natascha Einhart	Deutsche Gesellschaft für Allgemeinmedizin und Familienmedizin, DEGAM	06/2017 – 09/2020 ab 09/2020
Dr. med. Fritjof Bock Prof. Dr. med. Dr. h. c. Jörg Jerosch	Deutsche Schmerzgesellschaft	06/2017 – 09/2020 ab 09/2020
Dr. med. Hartmut Bork	Sektion Rehabilitation - Physikalische Therapie der DGOU	ab 06/2017
Prof. Dr. med. Karsten E. Dreinhöfer	Deutsches Netzwerk Versorgungsforschung, DNVF	ab 06/2017
Dr. Michaela Eikermann	Deutsches Netzwerk Evidenzbasierte Medizin, DNEbM	06/2017 – 08/2020
PD Dr. med. Stefan Fickert	Gesellschaft für Arthroskopie und Gelenkchirurgie, AGA	ab 11/2017
Prof. Dr. med. Ralph Gaulke	Deutsche Gesellschaft für Orthopädische Rheumatologie, DGORh	ab 06/2017
Dr. med. Holger Haas	Unabhängiger Fachexperte	ab 06/2017
Prof. Dr. med. Karl-Dieter Heller	Berufsverband für Orthopädie und Unfallchirurgie, BVOU	ab 06/2017
Prof. Dr. Daniela Holle und Sandra Schwenner	Deutsche Gesellschaft für Pflegewissenschaft, DGP	ab 06/2017
Dr. rer. nat. Ulrike Kaiser	Deutsche Gesellschaft für Psychologische Schmerztherapie und -forschung, DGPSF	ab 06/2017

Mandatsträger*innen	Fachgesellschaft/Organisation	Zeitraum
PD Dr. med. Stephan Kirschner	Deutsche Gesellschaft für Endoprothetik, AE	ab 06/2017
Prof. Dr. med. Bernd Kladny	Deutsche Gesellschaft für Orthopädie und Unfallchirurgie, DGOU	ab 06/2017
Prof. Dr. Christian Kopkow	Deutsche Gesellschaft für Physiotherapiewissenschaft, DGPTW	ab 06/2017
Dr. med. Michael Kremer	Deutsche Gesellschaft für Unfallchirurgie, DGU	ab 06/2017
Dorothee Krug	Verband der Ersatzkassen, vdek	ab 06/2017
Dipl.-Psych. Maike Linke	Deutsche Gesellschaft für Medizinische Psychologie, DGMP	ab 03/2019
Prof. Dr. med. Jörg Lützner	Vertreter S2k-Leitlinie Indikation Knie-TEP	ab 06/2017
Prof. Dr. med. Georg Matziolis PD Dr. med. Eric Röhner	Vertreter S2k-Coxarthrose-Leitlinie	01/2019 – 09/2020 ab 09/2020
Prof. Dr. med. habil. Tobias Renkawitz PD Dr. med. habil. Anne Postler	Arbeitsgemeinschaft Evidenzbasierte Medizin der DGOU	04/2020 – 09/2020 ab 09/2020
PD Dr. med. Philipp von Roth Dr. med. Sebastian Hardt Vincent Justus Leopold	Deutsche Gesellschaft für Orthopädie und Orthopädische Chirurgie, DGOOC	06/2017 – 06/2018 06/2018 – 09/2020 ab 09/2020
Prof. Dr. med. Hanns-Peter Scharf	Unabhängiger Fachexperte	06/2017 – 08/2020
PD Dr. med. habil. Johannes Schauwecker Prof. Dr. med. Rüdiger von Eisenhart-Rothe	Deutsche Hüftgesellschaft, DHG	06/2017 – 09/2020 ab 09/2020
Prof. Dr. med. Susanne Schwarzkopf	Deutsche Gesellschaft für Physikalische und Rehabilitative Medizin, DGPRM	ab 06/2017

Aufgrund terminlicher Verpflichtungen bzw. knapper Personalressourcen haben der Verband der Ersatzkassen und die Deutsche Gesellschaft für Pflegewissenschaft e.V. keine Mandatsträger*innen für die Konsenskonferenz nominiert. Das Deutsche Netzwerk Evidenzbasierte Medizin e.V. hat im September 2020 seine Beteiligung zurückgezogen. Prof. Dr. med. Hanns-Peter Scharf hat im August 2020 seine Beteiligung als unabhängiger Fachexperte zurückgezogen.

Des Weiteren waren stimmberechtigte Vertreter*innen drei verschiedener Kostenträger beteiligt, welche in Tabelle 2 aufgelistet sind.

Tabelle 2: Beteiligte Kostenträger in alphabetischer Reihenfolge

Mandatsträger*innen	Kostenträger
Dr. med. Melanie Foerder	AOK PLUS
Dorothee Krug	Verband der Ersatzkassen, vdek
Dr. med. Jürgen Malzahn	AOK-Bundesverband
Dr. med. Ursula Marschall	BARMER

Aufgrund terminlicher Verpflichtungen hat der Verband der Ersatzkassen keinen Mandatsträger für die Konsenskonferenz nominiert.

3.3 Beteiligung von Patient*innen

Bei der Leitlinienerstellung waren zudem fünf Vertreter*innen der Selbsthilfeorganisationen aktiv stimmberechtigt integriert, um die Perspektive der Patient*innen adäquat zu berücksichtigen:

- Deutsche Rheuma-Liga Bundesverband e.V., Forschungspartner*innen
  Name: Corinna Elling-Audersch
  Name: Ute Garske
  Name: Marianne Korinth
- Deutsche Rheuma-Liga Bundesverband e.V.
  Mandat: Prof. Dr. med. Erika Gromnica-Ihle
- Deutsche Arthrose-Hilfe e.V.
  Mandat: Prof. Dr. med. Niklaus Friederich

Sie waren bei der Abstimmung der Empfehlungen eingebunden. Die Mandatsträger*innen der Deutschen Rheuma-Liga Bundesverband e.V. haben weiterhin die Patient*innenleitlinie mitgestaltet.

3.4 Methodische Begleitung

Die Erstellung der Leitlinie erfolgte in Zusammenarbeit mit dem Zentrum für Evidenzbasierte Gesundheitsversorgung (ZEGV) der TU Dresden und wurde von Dr. med. Monika Nothacker (AWMF) methodisch begleitet.

4 Fragestellungen im Überblick

Eine Hüft-TEP bei Coxarthrose soll die Beschwerden lindern, welche durch die Coxarthose hervorgerufen werden. Folglich ist eine Hüft-TEP nur indiziert, wenn

1) die Diagnose Coxarthrose ausreichend gesichert ist und andere Beschwerdeursachen ausgeschlossen sind und
2) die Patient*innen über einen adäquaten Leidensdruck verfügen, welcher die Operation rechtfertigt und durch einfache Messverfahren objektiviert werden kann.
3) Wie bei jedem Eingriff muss geprüft werden, ob risikoärmere, alternative Therapien zur Verfügung stehen.
4) Da die Hüft-TEP ein elektiver Eingriff ist, müssen außerdem Kontraindikationen ausgeschlossen werden und
5) modifizierbare Risikofaktoren vor dem Eingriff möglichst optimal eingestellt werden.
6) Schließlich sollen in einer partizipativen Entscheidungsfindung individuelle Behandlungsziele und -präferenzen berücksichtigt werden.

Diesen grundsätzlichen Überlegungen folgend entwickelte das EKIT-Studienteam klinisch relevante Fragestellungen zu verschiedenen Aspekten der Indikationsprüfung vor Hüft-TEP für diese sechs Themenkomplexe. Die klinischen Fragestellungen wurden mit der Gesamtgruppe zu Beginn des Arbeitsprozesses diskutiert und spezifiziert.

Im Folgenden sind die klinischen Fragestellungen nach Themenkomplexen aufgelistet:

Diagnosesicherung (Sicherung des objektiven Therapiebedarfs)

- Wie kann die Diagnose Coxarthrose klinisch gesichert werden?
- Wann wird eine Bildgebung bei Patient*innen mit Coxarthrose notwendig?
- Welche weiterführende Bildgebung soll bei Patient*innen mit Coxarthrose vor der Indikationsstellung zu einer Hüft-TEP erfolgen?
- Welche Differentialdiagnosen zur Coxarthrose sollen bedacht werden?
- Wie kann die Schmerzursache innerhalb des Hüftgelenkes gesichert werden?
- Wie soll der Schweregrad der Coxarthrose eingeschätzt werden?
- Welchen Einfluss hat der radiologische Schweregrad der Coxarthrose auf das postoperative Ergebnis nach Hüft-TEP?
- Bei welchen anderen Erkrankungen soll die Indikation zur Hüft-TEP gestellt werden?

Leidensdruck der Patient*innen (Erfassung des subjektiven Bedarfs)

- Welche Coxarthrose-bedingten Beschwerden und Einschränkungen sollen zum Einschätzen des individuellen Leidensdrucks erhoben werden?
- Welche Instrumente der patientenberichteten Outcomes (engl.: Patient-Reported Outcome Measures, kurz: PROMs) eignen sich für die Beurteilung der Coxarthrose-bedingten Beschwerden und Einschränkungen?
- Ab welchem Ausmaß der Coxarthrose-bedingter Symptome und Einschränkungen ist die Voraussetzung für die Indikationsstellung zu einer Hüft-TEP gegeben?
- Welchen Einfluss hat die präoperative Symptomausprägung auf das Outcome nach einer Hüft-TEP-Operation?

Prüfung alternativer Therapieoptionen (Prüfung der Zweckmäßigkeit)

- Welche konservativen Therapien werden zur Behandlung von Coxarthrose eingesetzt?
- Welche konservativen Maßnahmen sind besonders wichtig („Kerntherapie“) und welche Effekte erzielen diese?
- Welche Effekte erzielen konservative Therapiemaßnahmen bei Patient*innen mit Coxarthrose vor einer Hüft-TEP-Operation?
- Wie ist das Nutzen-Risiko-Verhältnis der konservativen Therapie bei Patient*innen mit Coxarthrose im Vergleich zur Hüft-TEP?

Kontraindikationen

- Welchen Einfluss hat eine aktive lokale oder systemische Infektion auf das Outcome nach Hüft-TEP?
- Wie ist das Nutzen-Risiko-Verhältnis einer Hüft-TEP-Operation bei Patient*innen mit BMI ≥ 40 kg/m^2?

Optimierung modifizierbarer Risikofaktoren

- Welchen Einfluss haben modifizierbare Risikofaktoren auf das Outcome nach Hüft-TEP?
- Welchen Einfluss hat Nikotinkonsum/ eine Nikotinkarenz auf das Outcome nach Hüft-TEP?
- Welchen Einfluss hat der HbA1c-Wert auf das Outcome nach Hüft-TEP?
- Welchen Einfluss hat ein BMI $\geq$ 30 kg/m^2 / eine präoperative bariatrische Operation auf das postoperative Ergebnis nach Hüft-TEP?
- Welchen Einfluss hat eine ASB auf das Outcome nach Hüft-TEP?

- Welchen Einfluss haben psychische Erkrankungen auf das Outcome (wie Schmerz, Funktion, gesundheitsbezogene Lebensqualität) nach Hüft-TEP?
- Welchen Einfluss hat eine unbehandelte bzw. behandelte präoperative Anämie auf das Outcome nach Hüft-TEP?
- Welchen Einfluss hat eine präoperative intraartikulären Injektion von Cortikosteroiden auf das Outcome nach einer Hüft-TEP-Operation?

Partizipative Entscheidungsfindung

- Wie können Patient*innen in den Prozess der Entscheidungsfindung für eine Hüft-TEP-Operation eingebunden werden?

Die jeweils spezifische Ausformulierung der klinisch relevanten Fragestellungen für die entsprechenden Recherchen erfolgte durch das EKIT-Studienteam. Zu Beginn der systematischen Recherchen wurden die Fragestellungen für die Leitlinienrecherche und das Overview spezifiziert, wobei für das Overview die Aufbereitung der Forschungsfragen nach dem PICO-Schema (Population-Intervention-Comparison-Outcome) erfolgte. In Anlage 1 sind diese Forschungsfragen nach den Themenkomplexen aufgelistet.

5 Methodologische Exaktheit

Die Methodik zur Erstellung dieser Leitlinie richtet sich nach dem AWMF-Regelwerk (Version 1.1 vom 27.02.2013) (1).

Zur Beantwortung der für die Leitlinie relevanten Fragestellungen erfolgte eine übergeordnete breite systematische Literaturrecherche. Die folgenden Evidenzkategorien wurden dann ergebnisabhängig den jeweiligen Fragestellungen zugeordnet:

- **Evidenzbasiert:** Systematisches Overview durch eine Recherche von systematischen Reviews und Meta-Analysen.
- **Leitlinienadaptation:** Eine oder mehrere Empfehlungen aus einer publizierten und thematisch passenden Leitlinie werden adaptiert. Da bisher explizit zu den Indikationskriterien zur Hüfttotalendoprothese keine (S3-) Leitlinie vorliegt, ist eine direkte Leitlinienadaptation nicht immer möglich. Um kenntlich zu machen, dass auf der Grundlage einer systematischen Leitlinienrecherche Empfehlungen herangezogen wurden, führte das EKIT-Studienteam den zusätzlichen Begriff „Anpassung an existierende Leitlinien“ ein.
- **Konsensbasiert:** Es wird ein Expertenkonsens erstellt, für dessen Ableitung orientierende Literaturrecherchen zugrunde gelegt werden.

5.1 Leitlinienadaptation

5.1.1 Recherche nach evidenzbasierten Leitlinien

Die initiale Recherche nach Leitlinien zur Coxarthrose sowie Hüft-TEP in deutscher und englischer Sprache erfolgte im Zeitraum von August bis September 2019. Ein Update erfolgte im Januar 2020.

Die Suche nach Leitlinien erfolgte auf den Internetseiten fachübergreifender und fachspezifischer Anbieterorganisationen.

Fachübergreifend wurden Leitlinien in den folgenden Literaturdatenbanken durchsucht:

- des Centre for Reviews and Dissemination Health Technology Appraisals database (CRD HTA),
- die Datenbank der Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften (AWMF),
- die Datenbank des Guidelines International Network (G-I-N),
- die Dutch Guideline Database,
- die Datenbank des Scottish Intercollegiate Guidelines Network (SIGN),
- der Clinical Practice Guidelines der Canadian Medical Association (CMA) sowie in

- der Datenbank der National Guideline Clearinghouse (NGC) gesucht.

Zusätzlich wurden gezielt die Web-Seiten folgender Organisationen gesichtet:

- Arzneimittelkommission der deutschen Ärzteschaft (AkdÄ),
- National Institute for Health and Clinical Excellence (NICE),
- Institute for Clinical Systems Improvement (ICSI),
- New Zealand Guidelines Group National Health and Medical Research Council (NHMRC),
- American Academy of Orthopaedic Surgeons (AAOS),
- British Orthopaedic Association (BOA),
- New Zealand Orthopaedic Association (NZOA),
- European League Against Rheumatism (EULAR),
- American College of Rheumatology (ACR),
- Osteoarthritis Research Society International (OARSI),
- Outcome Measures in Rheumatology (OMERACT),
- American Association of Hip and Knee Surgeons (AAHKS),
- Finnish Medical Society Duodecim (Current Crae Guidelines).

In Abhängigkeit der datenbankspezifischen Suchanforderungen wurden die Suchbegriffe „Hüftarthrose“ bzw. „Hüftprothese“ verwendet. Wenn keine Suchfunktion angeboten wurde, sichtete eine Person alle unter der Rubrik: „Leitlinien“ aufgeführten Dokumente auf Relevanz. Die konkrete Suchanfrage in der jeweiligen Datenbank inkl. der gefundenen Treffer ist in der Anlage 2 aufgeführt. Alle initialen Treffer wurden von einer Person auf thematisch zutreffende Leitlinien hin geprüft.

Eine Leitlinie wurde eingeschlossen, wenn die folgenden Einschlusskriterien erfüllt waren:

1) Publikationstyp: Leitlinie
2) Gültigkeit bzw. Veröffentlichung der Leitlinie: nach 2010
3) Publikationssprache: deutsch, englisch
4) Art der Leitlinie: Evidenzbasiert
5) Inhaltliche Relevanz: Coxarthrose (bzw. zusammen mit anderen Arthrosen) und Hüft-TEP (bzw. zusammen mit anderen Endoprothesen)
6) Adressat*innen: Ärzt*innen

5.1.2 Ergebnisse der Leitlinienrecherche

Insgesamt wurden mit der Recherche (siehe Kapitel 5.1.1) 18 Leitlinien identifiziert. Im sich anschließenden Volltextscreening, welches von je zwei Personen unabhängig durchgeführt wurde, wurden neun Leitlinien aus folgenden Gründen ausgeschlossen.

Für eine Publikation traf ein anderer Publikationstyp zu (2), eine Publikation adressierte nicht ärztliches Personal (3), drei Arbeiten waren thematisch nicht relevant (4-6), drei Leitlinien waren nicht evidenzbasiert (7-9) und eine Leitlinie lag nur in finnischer Sprache vor (10) (siehe Anlage 2).

Die folgenden neun Leitlinien wurden eingeschlossen:

- National Institute for Health and Care Excellence (NICE): Osteoarthritis: care and management, 2014 (11),
- The Royal Australian College of General Practitioners (RACGP): Guideline for the management of knee and hip osteoarthritis. Second edition, Australia, 2018 (12),
- American Academy of Orthopaedic surgeons (AAOS): Management of Osteoarthritis of the Hip. Evidence Based Clinical Practice Guideline, 2017 (13),
- Fernandes L et al: EULAR recommendations for the non-pharmacological core management of hip and knee osteoarthritis, Ann Rheum Dis, 2013 (14),
- Sakellariou G et al: EULAR recommendations for the use of imaging in the clinical management of peripheral joint osteoarthritis, Ann Rheum Dis, 2017 (15),
- Bannuru RR et al: OARSI guidelines for the non-surgical management of knee, hip, and polyarticular osteoarthritis, Osteoarthritis Cartilage, 2019 (16),
- Second International Consensus Meeting on Musculoskeletal Infection (2nd ICM): Proceedings of the Second International Consensus Meeting on Musculoskeletal Infection: Hip and Knee, 2019 (17),
- Deutsche Gesellschaft für Orthopädie und Orthopädische Chirurgie (DGOOC): S3-Leitlinie Atraumatische Femurkopfnekrose des Erwachsenen (AWMF Registernummer 033-050), 2019 (18),
- Deutsche Gesellschaft für Orthopädie und Orthopädische Chirurgie (DGOOC): S2k-Leitlinie Koxarthrose (AWMF-Registernummer 033-001), 2019 (19).

  Aufgrund der inhaltlichen und regionalen Relevanz wurde die deutsche Leitlinie, trotz des Ausschlusskriteriums S2k-Level, als ergänzende Literatur eingeschlossen.

Durch eine zusätzliche Recherche in der Datenbank der AWMF zum Thema Anämie wurde die folgende Leitlinie eingeschlossen:

- Deutschen Gesellschaft für Anästhesiologie und Intensivmedizin (DGAI): S3-Leitlinie Diagnostik und Therapie der Präoperativen Anämie (AWMF Registernummer 001 – 0024), 2018 (20).

Die methodische Qualität der potentiell relevanten Leitlinien [n=10 (11-20)] wurde anhand der Domäne 3 (Methodologische Exaktheit) und Domäne 6 (Redaktionelle Unabhängigkeit) des Deutschen Leitlinienbewertungsinstruments (DELBI) (21) von zwei Personen bewertet. Alle neun evidenzbasierten Leitlinien (S2k-Leitlinie Koxarthrose exkludiert) wurden als potenziell geeignet eingestuft, relevante Empfehlungen zu adaptieren. Die wesentlichen Inhalte der eingeschlossenen Leitlinie sowie Ergebnisse der Leitlinienbewertungen wurden tabellarisch zusammengefasst. Die orientierend berücksichtigte S2k-Leitlinie Koxarthrose (19) wurde ebenfalls mit DELBI bewertet und in den Tabellen aufgeführt.

5.1.3 Weiterführende Recherchen

Für den Themenkomplex „Subjektiver Leidensdruck“ erfolgte eine zusätzliche orientierende Recherche nach nationalen und internationalen Empfehlungen zu Messinstrumenten im August 2020 auf ausgewählten Internetseiten. Die konkrete Suchanfrage pro Datenbank inkl. der gefundenen Treffer ist in der Anlage 3 aufgeführt.
Die folgenden drei Empfehlungen wurden eingeschlossen:

- Canadian Institute for Health Information: OECD Patient-Reported Indicator Surveys (PaRIS) Initiative: Patient-Reported Outcome Measures (PROMs) for Hip and Knee Replacement Surgery-International Data Collection Guidelines. Ottawa, 2019 (22),
- International Consortium for health Outcomes Measurements (ICHOM): Hip & Knee Osteoarthritis Data Collection Reference Guide. 2017 (23),
- Lützner J, Niemeier A, Calliess T, von Roth P: Ergebnismessung in der Hüft-und Knieendoprothetik-Empfehlung der Deutschen Gesellschaft für Endoprothetik (AE), 2020 (24).

Weiterhin wurde für die Aufbereitung des Themenkomplexes „Partizipative Entscheidungsfindung“ eine orientierende Literaturrecherche vorgenommen. Dazu wurden die identifizierten Leitlinien (siehe Kapitel 5.1.2) auf Themenrelevanz überprüft und eine MEDLINE-Recherche via PubMed.gov nach den Begriffen und Synonymen von „Hip arthroplasty“ und „expectation“ sowie „satisfaction“ durchgeführt. Die Referenzen wurden ebenso auf Relevanz hin überprüft. Darüber hinaus erfolgte eine freie Internetrecherche z.B. über Patient*innenorganisationen.

5.2 Systematische Literaturrecherchen

Systematische Literaturrecherchen wurden im August 2019 in den Datenbanken Medline (über die PubMed-Suchoberfläche) und EMBASE (über die OVID-Suchoberfläche) durchgeführt.

Recherchiert wurden systematische Reviews und Meta-Analysen in deutscher oder englischer Sprache. Um für alle der unter Kapitel 4 aufgeführten Fragestellungen Evidenz zu finden, wurde eine thematisch breite systematische Recherchestrategie angewendet. In Tabelle 3 sind die Suchterme und deren Verknüpfung aufgeführt, die für EMBASE angewendet wurden. Hierbei kamen die von SIGN (25) vorgeschlagenen Suchfilter für systematische Reviews und Meta-Analysen zum Einsatz. Die Ergebnisse der gesamten Literatursuche (inkl. Angabe der Treffer) können der Anlage 4 entnommen werden.

Tabelle 3: angewendete Suchstrategie in EMBASE

	Nr.	Suchterme
Intervention	1	exp hip/ or (hip or hip joint$).ti,ab.
	2	exp arthroplasty/ or (arthroplast$ or total joint arthroplast$ or total arthroplast$ or replacement$ or total joint replacement$ or TJA or total replacement$ or implant$ or artificial implant$ or prosthes$ or prosthetic or endoprosthes$ or endoprosthetic or reconstruct$).ti,ab.
	3	1 and 2
	4	exp total hip arthroplasty/ or (THA or THR or total hip arthroplast$ or total hip replacement$).ti,ab.
	5	3 or 4
SIGN Search filter	6	exp Meta Analysis/
	7	((meta adj analy$) or metaanalys$).tw.
	8	(systematic adj (review$1 or overview$1)).tw.
	9	or/6-8
	10	cancerlit.ab.
	11	cochrane.ab.
	12	embase.ab.
	13	(psychlit or psyclit).ab.
	14	(psychinfo or psycinfo).ab.

	Nr.	Suchterme
	15	(cinahl or cinhal).ab.
	16	science citation index.ab.
	17	bids.ab.
	18	or/10-17
	19	reference lists.ab.
	20	bibliograph$.ab.
	21	hand-search$.ab.
	22	manual search$.ab.
	23	relevant journals.ab.
	24	or/19-23
	25	data extraction.ab.
	26	selection criteria.ab.
	27	25 or 26
	28	review.pt.
	29	27 and 28
	30	letter.pt.
	31	editorial.pt.
	32	animal/
	33	human/
	34	32 not (32 and 33)
	35	or/30-31,34
	36	9 or 18 or 24 or 29
	37	36 not 35
	38	5 and 37

5.2.1 Auswahl und Bewertung der Evidenz

Folgende vorab definierte Einschlusskriterien wurden nach dem sog. PICO-Schema angewendet:

Population: Patient*innen mit Coxarthrose; sofern keine Evidenz zu Patient*innen mit Coxarthrose identifiziert werden konnte, wurden auch Arbeiten eingeschlossen, die Patient*innen mit Coxarthrose und anderen Arthrose-Erkrankungen wie Gonarthrose gemeinsam untersuchten.

Intervention: Hüft-TEP

Outcome: Das EKIT-Studienteam hat sich darauf verständigt, als patientenrelevante Endpunkte das ICHOM Standard Set for Hip & Knee Osteoarthritis zu verwenden (23). Das ICHOM Standard Set umfasst akute Komplikationen der Intervention (Mortalität, Wiederaufnahme), den Grad der Krankheitskontrolle (Behandlungsintensivierung, Notwendigkeit einer Operation/ Revision) und patientenberichtete Angaben zum Gesundheitszustand (Gelenkschmerz, körperliche Beeinträchtigung, Arbeitsstatus, gesundheitsbezogene Lebensqualität, Gesamtzufriedenheit mit dem Ergebnis der Intervention). Diese Endpunkte sollen im Verlauf nach erfolgter diagnostischer oder therapeutischer Intervention erhoben werden, wobei das Intervall mindestens ein Jahr betragen sollte.

Publikationstyp: Eingeschlossen wurden ausschließlich systematische Reviews und Meta-Analysen. Um die Einschlusskriterien zu erfüllen, muss eine Bewertung der in den Reviews und Meta-Analysen eingeschlossenen Primärstudien erfolgt sein und eine nachvollziehbare Suchstrategie berichtet werden.

Sprache: Deutsch, Englisch

Die über die Recherche initial gefundenen Treffer wurden auf der Basis der Titel-Abstracts sowie der Volltexte durch zwei Personen unabhängig gesichtet. Der gesamte Selektionsprozess ist in Abb. 1 dargestellt.

Die kritische Bewertung der 39 als relevant eingeschlossenen systematische Reviews und Meta-Analysen erfolgte unabhängig durch zwei Personen mit dem „A Measurement Tool for the Assessment of Multiple Systematic Reviews (AMSTAR II)“(26).

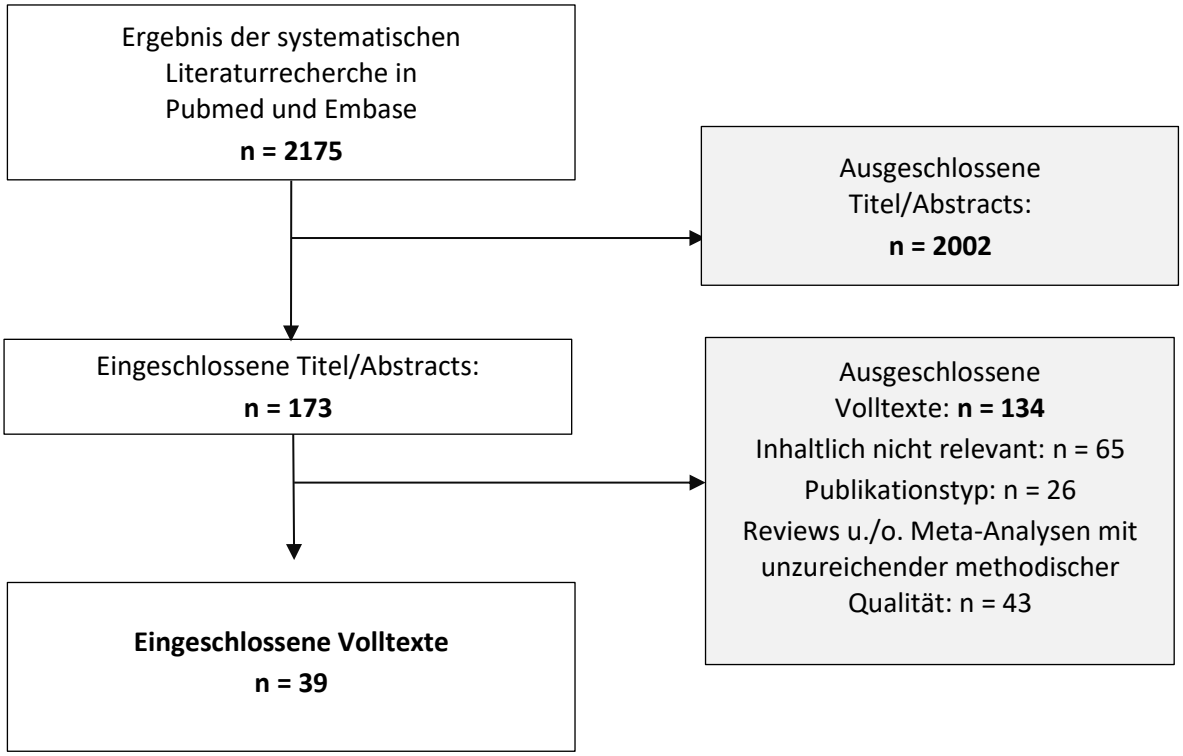

Abb. 1: Selektionsprozess der initial recherchierten Arbeiten

5.3 Schema der Evidenzklassifikation

In dieser Leitlinie wurde zur Einordung der wissenschaftlichen Aussagekraft der publizierten Literatur vor dem Hintergrund des potenziellen Verzerrungsrisikos und unter Berücksichtigung der AMSTAR-Bewertung, die von SIGN formulierten Evidenzlevel herangezogen (siehe Tabelle 4).

Tabelle 4: Evidenzlevel

Evidenzlevel	Studienbasis
1^{++}	High-quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias
1^{+}	Well-conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias
1^{-}	Meta-analyses, systematic reviews, or RCTs with a high risk of bias
2^{++}	High-quality systematic reviews of case-control or cohort studies,

	High-quality case-control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causa
2^+	Well-conducted case-control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
2^-	Case-control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
3	Non-analytic studies, e.g. case reports, case series
4	Expert opinion

Falls für eine Empfehlung mehrere systematische Reviews und Meta-Analysen herangezogen wurden, so ist in der Langfassung stets das höchste Evidenzlevel angegeben. Falls bei zugrunde gelegten Leitlinien kein Evidenzgrad angegeben wurde, ermittelte das EKIT-Studienteam anhand des Studientyps und der Studienqualität diesen nachträglich.
Die Leitliniensynopsen und die Evidenztabellen der extrahierten Publikationen sind in der Anlage 4 aufgeführt.

5.4 Formulierung der Empfehlungen und formale Konsensfindung

Durch das EKIT-Studienteam wurden zu allen Empfehlungen das Evidenzlevel der zugrundeliegenden Studien ausgewiesen sowie ein Vorschlag für die Stärke der Empfehlung (Empfehlungsgrad) erarbeitet. Im Rahmen der strukturierten Konsenskonferenz wurden Inhalt und Stärke der Empfehlungen von den stimmberichtigten Mandatsträger*innen formal abgestimmt. Die unterschiedliche Graduierung der in dieser Leitlinie enthaltenen Empfehlungen ist in Tabelle 5 dargestellt.

Graduierung der Empfehlungen

Tabelle 5: Graduierung von Empfehlungen

Empfehlungsgrad	Beschreibung	Syntax
A	Starke Empfehlung	soll / soll nicht
B	Empfehlungen	sollte / sollte nicht
0	Empfehlung offen	Kann erwogen werden / kann verzichtet werden

Die Graduierung der Empfehlungen orientiert sich an GRADE (Grading of Recommendations, Assessment, Development and Evaluation) (27). Neben der vorhandenen Evidenzstärke berücksichtigt die Graduierung auch die Konsistenz der Studienergebnisse, die Abwägung von potenziellem Nutzen und Risiko, ethische, rechtliche und ökonomische Erwägungen, Patient*innenpräferenzen und die Umsetzbarkeit sowie Anwendbarkeit im deutschen Versorgungskontext. Die Berücksichtigung dieser Kriterien konnte zu einem Abweichen der auf Grundlage des Evidenzlevels eingestuften Empfehlungsstärke führen.

Expertenkonsens

Als Expertenkonsens (EK) werden Empfehlungen bezeichnet, zu denen keine ausreichende Evidenz gefunden werden konnte. In der Regel adressieren diese Empfehlungen Vorgehensweisen der guten klinischen Praxis, zu denen keine wissenschaftlichen Studien notwendig sind bzw. erwartet werden können.

Stimmberechtigungen

Alle Mandatsträger*innen waren stimmberechtigt. Bei den Empfehlungen 1.7, 2.3, 3.3, 4.4, 4.5, 5.1, 5.1.1, 5.1.2 und 5.1.3 waren fünf Mandatsträger aufgrund von Interessenkonflikten (siehe Anlage 5) nicht stimmberechtigt.

Konsentierung und Verabschiedung der Empfehlungen

Ein Konsens war erreicht, wenn > 75% der Teilnehmer*innen der jeweiligen Empfehlung zustimmten. Weiterhin wurde differenziert zwischen den Konsensstärken

- starker Konsens: > 95% der Stimmberechtigten
- Konsens: > 75 – 95% der Stimmberechtigten
- Mehrheitliche Zustimmung: > 50 – 75% der Stimmberechtigten
- Dissens: < 50% der Stimmberechtigten.

Die strukturierte Konsensfindung erfolgte im Rahmen einer als Hybrid Meeting durchgeführten Konsenskonferenz am 21.09.2020 nach dem Vorgehen des National Instituts of Health (NIH) unter neutraler Moderation durch Dr. med. Monika Nothacker (AWMF):

- Einweisung der Teilnehmer*innen in die Technik der strukturierten Konsensfindung durch die Moderatorin der AWMF,
- Probeabstimmung,
- Vorstellung der Empfehlungen und ggf. der Evidenzgrundlage durch das EKIT-Studienteam,
- Gelegenheit zu inhaltlichen Rückfragen, Aufnahme von Änderungsvorschlägen mit Begründung; ggf. Zusammenfassen/Priorisieren der Änderungsvorschläge,
- Abstimmung der Alternativen,

- bei Nicht-Erreichen eines ausreichenden Konsenses (>75%) erneute Diskussion und Abstimmung von Änderungsvorschlägen.

Für alle Empfehlungen konnte ein Konsens oder starker Konsens erzielt werden.

Die im Anschluss aus den verabschiedeten Empfehlungen abgeleitete Checkliste zu den (Kontra-) Indikationskriterien wurde der Leitliniengruppe zur Kommentierung zur Verfügung gestellt.

6 Reviewverfahren und Verabschiedung

Nach der Fertigstellung der Leitlinie erfolgte einerseits eine inhaltliche Prüfung durch die beteiligten Fachgesellschaften sowie ein methodischer Review durch die AWMF. Nach der methodischen Überarbeitung der Dokumente wurde die Leitlinie mit der Bitte um formale Zustimmung an die beteiligten Fachgesellschaften versendet.

7 Unabhängigkeit und Umgang mit Interessenkonflikten

Die finanzielle Unterstützung durch die Stiftung Endoprothetik wurde für Personalmittel (0,6 Personalstelle wissenschaftlicher Mitarbeiter*innen über 22 Monate) und Sachmittel (Software-Lizenz der Ärzte- und Patientenbefragungen) genutzt. Die Erstellung der Leitlinie erfolgte in redaktioneller Unabhängigkeit.

Alle Mitglieder wurden repräsentativ aus allen relevanten Fachgebieten (Orthopädie und Unfallchirurgie, Allgemeinmedizin, Rheumatologie, Schmerztherapie, Psychotherapie) sowie Patientenvertreter*innen und Kostenträger*innen ausgewogen zusammengestellt. An dem Leitlinienprojekt sind keine Teilnehmer*innen vertreten, die ihren Unterhalt ausschließlich mit der Implantation von Hüft-TEP verdienen und daher einen hohen Interessenkonflikt hätten. Die Leitlinie wird von einem unabhängigen Forschungsinstitut (ZEGV) maßgeblich gestaltet.

Alle Mitglieder*innen legten während des Leitlinienprozesses eine schriftliche Erklärung (AWMF-Formular zur Erklärung von Interessen im Rahmen von Leitlinienvorhaben, Stand 23.05.2018) zu ihren Interessenkonflikten vor. Die offengelegten Interessenkonflikte sind in Anlage 5 aufgelistet.

Das EKIT-Studienteam bewertete gemeinschaftlich die Interessenkonflikte im Vorfeld der Konsenskonferenz.

Zu Beginn der Konsenskonferenz am 21.9.2020 wurde das vom EKIT-Studienteam intern diskutierte und festgelegte Vorgehen zum Umgang mit den offengelegten Interessenkonflikten präsentiert. Die Bewertung der Interessenkonflikte ist in Tabelle 6 dargestellt.

Tabelle 6: Bewertung der Interessenkonflikte

Einstufung der Interessenkonflikte	**Begründungen**	**Umgang**
1) kein Interessenkonflikt		
		Abstimmung für alle Empfehlungen, d.h. keine Konsequenz für die Leitlinienarbeit und Abstimmung
2) Geringer Interessenkonflikt		
aufgrund *direkt* erhaltener Aufwandsentschädigungen für Vorträge und Schulungen mit Hüft-TEP-Bezug	Wissenschaftliche Vorträge und Schulungsmaßnahmen haben keinen Bezug zur Indikationsstellung der Hüft-TEP im Sinne von Unterstüt-	Abstimmung für alle Empfehlungen

Einstufung der Interessenkonflikte	Begründungen	Umgang
	zung gewinnorientierender Unternehmensbestrebungen. Sie dienen dem Erkenntnisgewinn und der Qualitätsverbesserung der medizinischen Versorgung.	
aufgrund *indirekt* erhaltener Drittmittel an die Institution für Forschungsprojekte mit Hüft-TEP-Bezug	Sponsorunterstützte Forschungsprojekte (Drittmittel) an die Institution sind transparent über Drittmittelanzeige/ Drittmittelkalkulation abgebildet und dienen zu 100% der finanziellen Unterstützung von Personal- und Sachmitteln des Forschungsprojektes. Eine persönliche Vorteilsnahme ist nicht möglich.	
3) relevanter Interessenkonflikt		
aufgrund *direkt* erhaltener Honorare für Gutachtertätigkeit, Mitarbeit in Beiräten und Tantiemen/ Royalties o.ä.		Keine Abstimmung für Empfehlungen mit direktem Bezug zur Indikationsstellung einer Hüft-TEP: Empfehlungen 1.7, 2.3, 3.3, 4.4, 4.5, 5.1, 5.1.1, 5.1.2 und 5.1.3

8 Verbreitung und Implementierung

Folgende Aktivitäten dienen zur Verbreitung und Implementierung der Leitlinie:

- Erstellung einer Patient*innenleitlinie,
- Erarbeitung einer Entscheidungshilfe in Form einer Checkliste auf der Grundlage der verabschiedeten Leitlinienempfehlungen,
- Publikation der Leitliniendokumente auf den Internetseiten der beteiligten Fachgesellschaften und Organisationen,
- Publikation der Leitlinieninhalte in Fachzeitschriften,
- Vorstellung auf Fachkongressen.

9 Anlagen

Anlage 1: Fragestellungen und PICO-Fragen für Leitlinienrecherche und Systematische Recherche

Kapitel 6 in der Langfassung: Diagnosesicherung (Sicherung des objektiven Therapiebedarfs)

- Wie kann die Diagnose Coxarthrose laut Leitlinien-Empfehlungen klinisch gesichert werden?
- Welche Differentialdiagnosen zur Coxarthrose sollen laut Leitlinien-Empfehlungen bedacht werden?
- Wann wird laut Leitlinien-Empfehlungen eine Bildgebung bei Patient*innen mit Coxarthrose notwendig?
- Welche weiterführende Bildgebung soll bei Patient*innen mit Coxarthrose vor der Indikationsstellung zu einer Hüft-TEP laut Leitlinien-Empfehlungen erfolgen?
- Wie kann die Schmerzursache innerhalb des Hüftgelenkes laut Leitlinien-Empfehlungen gesichert werden?
- Wie soll der Schweregrad der Coxarthrose laut Leitlinien-Empfehlungen eingeschätzt werden?
- Welchen Einfluss hat der radiologische Schweregrad der Coxarthrose auf das postoperative Ergebnis nach Hüft-TEP?
    - P – Patient*innen mit Coxarthrose
    - I – hoher radiologischer Schweregrad Coxarthrose
    - C – niedriger radiologischer Schweregrad Coxarthrose
    - O – postoperative Outcomes nach Hüft-TEP
- Bei welchen anderen Erkrankungen soll laut Leitlinien-Empfehlungen die Indikation zur Hüft-TEP gestellt werden?

Kapitel 7 in der Langfassung: Leidensdruck der Patient*innen (Erfassung des subjektiven Bedarfs)

- Welche Coxarthrose-bedingten Beschwerden und Einschränkungen sollen laut Leitlinien-Empfehlungen zum Einschätzen des individuellen Leidensdrucks erhoben werden?
- Welche Instrumente der patientenberichteten Outcomes (engl.: Patient-Reported Outcome Measures, kurz: PROMs) werden für die Beurteilung der Coxarthrose-bedingten Beschwerden und Einschränkungen empfohlen?
- Welche psychometrischen Testeigenschaften weisen PROMs auf, die im Kontext Coxarthrose/ Hüft-TEP zum Einsatz kommen?
    - P – Patient*innen mit Coxarthrose
    - Domäne – alle patienten-berichteten Messinstrumente zur Erfassung des Leidensdrucks
    - I – Hüft-TEP
    - C – __
    - O – Psychometrische Gütekriterien
- Welche Leitlinien-Empfehlungen liegen zum Ausmaß Coxarthrose-bedingter Symptome und Einschränkungen als Voraussetzung für die Indikationsstellung zu einer Hüft-TEP vor?
- Welchen Einfluss hat die präoperative Symptomausprägung auf das Outcome nach einer Hüft-TEP-Operation?
    - P – Patient*innen mit Coxarthrose
    - I – Hüft-TEP bei Patient*innen mit geringer Symptomausprägung
    - C – Hüft-TEP bei Patient*innen mit starker Symptomausprägung
    - O – Outcome nach Hüft-TEP

Kapitel 8 in der Langfassung: Prüfung alternativer Therapieoptionen (Prüfung der Zweckmäßigkeit)

- Welche konservativen Therapien werden grundsätzlich zur Behandlung von Coxarthrose in Leitlinien empfohlen?
- Welche konservativen Maßnahmen werden in Leitlinien als besonders wichtig („Kerntherapie“) empfohlen und welche Effekte erzielen diese?
- Welche Effekte erzielen konservative Therapiemaßnahmen bei Patient*innen mit Coxarthrose vor einer Hüft-TEP-Operation?
    - P – Patient*innen mit Coxarthrose
    - I – konservative Therapie über einen Mindestzeitraum
    - C – keine konservative Therapie über einen Mindestzeitraum
    - O – Outcome nach konservativer Therapie
- Wie ist das Nutzen-Risiko-Verhältnis der konservativen Therapie bei Patient*innen mit Coxarthrose im Vergleich zur Hüft-TEP?
    - P – Patient*innen mit Coxarthrose
    - I – Hüft-TEP-Operation
    - C – konservative Therapie
    - O – Outcome nach Hüft-TEP bzw. konservativer Therapie

Kapitel 9 in der Langfassung: Kontraindikationen

- Welchen Einfluss hat eine aktive lokale oder systemische Infektion laut Leitlinien-Empfehlungen auf das Outcome nach Hüft-TEP?
- Welche akuten oder chronischen Erkrankungen sind aufgrund ihres erhöhten Sterblichkeitsrisikos Kontraindikationen für die Hüft-TEP-Operation?
- Welche Empfehlungen enthalten Leitlinien zum Nutzen-Risiko-Verhältnis einer Hüft-TEP-Operation bei Patient*innen mit BMI ≥ 40 kg/m^2?
- Welchen Einfluss hat ein ≥ 40 kg/m^2 auf das postoperative Outcome nach Hüft-TEP?
    - P – Patient*innen mit Coxarthrose
    - I – Hüft-TEP bei Patient*innen mit ≥ 40 kg/m^2
    - C – Hüft-TEP bei Patient*innen mit ≥ 40 kg/m^2
    - O – Outcome nach Hüft-TEP

Kapitel 10 in der Langfassung: Optimierung modifizierbarer Risikofaktoren

- Welchen Einfluss haben modifizierbare Risikofaktoren laut Leitlinien-Empfehlungen auf das Outcome nach Hüft-TEP?
- Wird eine Nikotinkarenz vor Hüft-TEP-Operation in Leitlinien empfohlen?
- Welchen Einfluss hat Nikotinkonsum/ eine Nikotinkarenz auf das Outcome nach Hüft-TEP?
    - P – Patient*innen mit Coxarthrose
    - I – Hüft-TEP bei Raucher*innen
    - C – Hüft-TEP bei Nicht-Raucher*innen
    - O – Outcome nach Hüft-TEP
- Welche Empfehlungen enthalten Leitlinien zur Einstellung eines überhöhten HbA1c-Wertes vor Hüft-TEP-Operation?
- Welchen Einfluss hat der HbA1c-Wert auf das Outcome nach Hüft-TEP?
    - P – Patient*innen mit Coxarthrose
    - I – Hüft-TEP bei Patient*innen mit erhöhten HbA1c-Werten

C – Hüft-TEP bei Patient*innen mit physiologischen HbA1c-Werten
O – Outcome nach Hüft-TEP

- Welche Empfehlungen enthalten Leitlinien zur Gewichtsabnahme bei Patient*innen mit BMI ≥ 30 kg/m^2 vor Hüft-TEP-Operation?
- Welchen Einfluss hat ein BMI ≥ 30 kg/m^2/ eine präoperative bariatrische Operation auf das post-operative Ergebnis nach Hüft-TEP?
  P – Patient*innen mit Coxarthrose
  I – Hüft-TEP bei Patient*innen mit BMI ≥ 30 kg/m^2 / Hüft-TEP bei Patient*innen mit präoperativer bariatrischer Operation
  C – Hüft-TEP bei Patient*innen mit BMI < 30 kg/m^2 / Hüft-TEP bei Patient*innen ohne präoperativer bariatrischer Operation
  O – Outcome nach Hüft-TEP
- Welchen Einfluss hat eine ASB auf das Outcome nach Hüft-TEP?
  P – Patient*innen mit Coxarthrose
  I – Hüft-TEP bei Patient*innen mit asymptomatischer Bakteriurie
  C – Hüft-TEP bei Patient*innen mit zuvor behandelter asymptomatischer Bakteriurie
  O – Outcome nach Hüft-TEP
- Welchen Einfluss haben psychische Erkrankungen auf das Outcome (Schmerz, Funktion, gesundheitsbezogene Lebensqualität) nach Hüft-TEP?
  P – Patient*innen mit Coxarthrose
  I – Hüft-TEP bei Patient*innen mit psychischen Erkrankungen (ICD- oder DSM-Schlüsseln)
  C – Hüft-TEP bei Patient*innen ohne psychische Erkrankungen
  O – Outcome nach Hüft-TEP
- Welche Empfehlungen enthalten Leitlinien bezüglich der präoperativen Anämie vor Hüft-TEP-Operation?
- Welchen Einfluss hat eine unbehandelte bzw. behandelte präoperative Anämie auf das Outcome nach Hüft-TEP?
  P – Patient*innen mit Coxarthrose
  I – Hüft-TEP bei Patient*innen mit präoperativer Anämie mit Therapie
  C – Hüft-TEP bei Patient*innen mit präoperativer Anämie ohne Therapie
  O – Outcome nach Hüft-TEP
- Welche Empfehlungen enthalten Leitlinien zum Einfluss der präoperativen IACI auf das Outcome nach einer Hüft-TEP-Operation?
- Welchen Einfluss hat die IACI auf das Outcome nach einer Hüft-TEP-Operation?
  P – Patient*innen mit Coxarthrose
  I – intraartikuläre Injektion von Corticosteroiden innerhalb 3 Monate vor Hüft-TEP
  C – keine intraartikuläre Injektion von Corticosteroiden
  O – Outcome nach Hüft-TEP

Kapitel 11 in der Langfassung: Partizipative Entscheidungsfindung

- Wie können Patient*innen in den Prozess der Entscheidungsfindung für eine Hüft-TEP-Operation eingebunden werden?

Anlage 2: Leitlinienrecherche - konkrete Suchanfrage und gefundene Treffer

9.1.1.1

9.1.1.2

9.1.1.3 Legende der Ausschlusskriterien

- A1: Dublette aufgrund der Suche in mehreren Datenbanken bzw. Teil einer anderen Leitlinie
- A2: Publikationstyp (keine Leitlinie bzw. keine klaren Handlungsempfehlungen)
- A3: Publikationssprache nicht deutsch oder englisch
- A4: abgelaufene Gültigkeit oder Veröffentlichung vor 2010
- A5: keine inhaltliche Relevanz
- A6: keine ärztlichen Adressaten
- A7: Suchstrategie (systematisch vs. selektiv) nicht beschrieben
- A8: Konsensprozess nicht beschrieben

9.1.1.4

9.1.1.5

9.1.1.6 Fachübergreifende Anbieterorganisationen

Deutschland

1) Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften (AWMF)

Suchdatum: 27.08.2019

- www.awmf.org/leitlinien/leitlinien-suche.html
- Kategorien: Entwicklungsstufe S3/S2e+S2k
- Suche nach „Hüftgelenk“
- Treffer: 4
- davon relevant: 1 (3 x A5)
- Deutsche Gesellschaft für Orthopädie und Orthopädische Chirurgie (DGOOC): S2k-Leitlinie Koxarthrose (AWMF-Registrierungsnummer 033-001), 2019 (19) → Einschluss als orientierende Leitlinie
- Suche nach „Endoprothese“
- Deutsche Gesellschaft für Orthopädie und Orthopädische Chirurgie (DGOOC): S3-Leitlinie Atraumatische Femurkopfnekrose des Erwachsenen (AWMF Registernummer 033-050), 2019 (18) → Einschluss

2) Arzneimittelkommission der deutschen Ärzteschaft (AkdÄ)

Suchdatum: 28.08.2019

- https://www.akdae.de/Arzneimitteltherapie/TE/index.html
- „Therapieempfehlungen A-Z“ gesichtet:
- Treffer: 3
- davon relevant: 0 (3 x A5)
- „Archiv Therapieempfehlungen“ gesichtet:
- Treffer: 17
- davon relevant: 0 (16 x A4, 1 x A5)

3) Deutsche Gesellschaft für Allgemeinmedizin (DEGAM)

Suchdatum: 28.08.2019

- https://www.degam.de/degam-leitlinien-379.html
- „Leitlinien der DEGAM“ gesichtet

- Treffer: 28
- davon relevant: 0 (10 x A4, 18 x A5)

4) Ärztliches Zentrum für Qualität in der Medizin (ÄZQ)

Suchdatum: 28.08.2019

- www.leitlinien.de
- Suche „Hüftarthrose”: 0 Treffer
- Suche „Hüftprothese”: 0 Treffer
- Suche „Endoprothese AND Hüftgelenk”: 0 Treffer

Niederlande

Suchdatum: 29.08.2019

- https://richtlijnendatabase.nl/en/
- Suche „hip”

- Treffer: 1
- davon relevant: 1
- Nederlandse Orthopaedische Vereniging: Total hip prosthesis (THP), 2019 (8) → Ausschluss: A7

Finnland

Suchdatum: 29.08.2019

- https://www.kaypahoito.fi/en/
- Suche unter „Current Care Guidelines – Abstracts – a-z”

- Treffer: 102
- davon relevant: 1 (2 x A2, 99 x A5)
- The Finnish Medical Society Duodecim: Current Care Guidelines: Knee and hip osteoarthritis, 2012 (10) → Ausschluss: A3

England and Schottland

1) National Institute for Health and Clinical Excellence (NICE)

Suchdatum: 28.08.2019

- https://www.nice.org.uk/guidance/published
- Suche nach „hip”

- Treffer: 14
- davon relevant: 2 (6 x A2, 6 x A5)
- National Institute for Health and Care Excellence (NICE): Total hip replacement and resurfacing arthroplasty for end-stage arthritis of the hip, 2014 (5) → Ausschluss: A5
- National Institute for Health and Care Excellence (NICE): Minimally invasive total hip replacement, 2014 (4) → Ausschluss: A5

- Suche nach „osteoarthritis”

- Treffer: 10

- davon relevant: 1 (2 x A2, 7 x A5)
- National Institute for Health and Care Excellence (NICE): Osteoarthritis: care and management, 2014 (11) → Einschluss

2) Centre for Reviews and Dissemination Health Technology Appraisals database (CRD HTA)
Suchdatum: 28.08.2019

- www.crd.york.ac.uk/crdweb
- Suche nach „guideline AND hip"
- Treffer: 11
- davon relevant: 0 (8 x A2, 3 x A5)

3) Scottish Intercollegiate Guidelines Network (SIGN)
Suchdatum: 28.08.2019

- https://www.sign.ac.uk/our-guidelines.html
- Sichtung Liste „current guidelines" unter Topic „Musculoskeletal"
- Treffer: 2
- davon relevant: 0 (2 x A5)
- Sichtung Liste „current guidelines" unter Topic „other"
- Treffer: 5
- davon relevant: 0 (5 x A5)
- Sichtung Liste „archived guidelines" unter Topic „othopaedics"
- Treffer: 4
- davon relevant: 0 (4 x A4)
- Sichtung Liste „archived guidelines" unter Topic „surgery"
- Treffer: 4
- davon relevant: 0 (4 x A4)

4) Guidelines International Network (G-I-N)
Suchdatum: 27.08.2019

- https://www.g-i-n.net/library/international-guidelines-library
- Languages: English, German
- Publication Status: published
- Publication Type: Guideline, Guideline Clearing Report
- Suche nach „hip"
- Treffer: 40
- davon relevant: 3 (1 x A1, 7 x A2, 1 x A3, 28 x A5)
- Royal Dutch Society for Physical Therapy: KNGF Guideline for Physical Therapy in patients with Osteoarthritis of the hip and knee, Netherlands, 2010 (3) → Ausschluss: A6
- The Royal Australian College of General Practitioners (RACGP): Guideline for the management of knee and hip osteoarthritis. Second edition, Australia, 2018 (12) → Einschluss
- American Academy of Orthopaedic surgeons (AAOS): Management of Osteoarthritis of the Hip. Evidence Based Clinical Practice Guideline, 2017 (13) → Einschluss

Kanada

1) Clinical Practice Guidelines der Canadian Medical Association (CMA)

Suchdatum: 28.08.2019

- https://www.cma.ca/En/Pages/clinical-practice-guidelines.aspx
- Suche nach „Hip AND osteoarthritis AND Arthroplasty": 0 Treffer
- Suche nach „Hip AND osteoarthritis AND Replacement": 0 Treffer
- Suche nach „Hip AND osteoarthritis":
- 4 Treffer
- davon relevant: 1 (1 x A2, 1 x A3, 1 x A5)
- Brosseau L et al: Ottawa Panel evidence-based clinical practice guidelines for therapeutic exercise in the management of hip osteoarthritis, Clin Rehabil, 2016 (2) → Ausschluss: A2
- Suche nach „Hip AND Replacement"/ " Hip And arthroplasty:
- 4 Treffer
- davon relevant: 0 (2 x A3, 2 x A5)

USA

1) National Guideline Clearinghouse (NGC - AHRQ)

Suchdatum: 28.08.2019

- www.guideline.gov/search/advanced-search.aspx
- Advanced Search – Results with all of the words „hip, osteoarthritis, replacement, guideline"
- Treffer: 10
- davon relevant: 0 (10 x A2)

Suchdatum: 29.08.2019

- Advanced Search – Results with all of the words „hip, osteoarthritis, arthroplasty, guideline"
- Treffer: 4
- davon relevant: 0 (4 x A2)
- Advanced Search – Results with all of the words „hip, osteoarthritis, guideline"
- Treffer: 21
- davon relevant: 0 (20 x A2, 1 x A5)

2) Institute for Clinical Systems Improvement (ICSI)

Suchdatum: 28.08.2019

- https://www.icsi.org/guidelines/
- Sichtung aller guidelines A – Z
- Treffer: 17
- davon relevant: 0 (17 x A5)

Australien und Neuseeland

1) National Health and Medical Research Council (NHMRC), AUS

Suchdatum: 28.08.2019

- https://www.clinicalguidelines.gov.au/
- Sichtung nach „hip"
- Treffer: 5
- davon relevant: 0 (1 x A1, 1 x A2, 3 x A5)

2) New Zealand Guidelines Group

Suchdatum: 29.08.2019

- https://www.health.govt.nz/about-ministry/ministry-health-websites/new-zealand-guidelines-group
- Sichtung nach „hip" mit Filter „Guides and standards"
- Treffer: 1
- davon relevant: 0 (1 x A5)
- Sichtung nach „Clinical Guidelines" mit Filter „Guides and standarts"
- Treffer: 46
- davon relevant: 0 (15 x A4, 31 x A5)

9.1.1.7

9.1.1.8 Fachspezifische Anbieterorganisationen

Deutsche Gesellschaft für Orthopädie und Unfallchirurgie (DGOU)

Suchdatum: 29.08.2019

- https://dgou.de/q-s/leitlinien-in-o-und-u/
- Suche „Leitlinie"
- Verlinkung zu DGU und DGOOC und dann jeweils zu AWMF (siehe oben)

Berufsverband für Orthopädie und Unfallchirurgie (BVOU)

Suchdatum: 29.08.2019

- https://www.bvou.net/wissen/qualitaet/leitlinien/
- Suche „Leitlinie"
- Treffer: 13
- davon relevant: 0 (7 x A2, 6 x A5)

American Academy of Orthopaedic Surgeons (AAOS)

Suchdatum: 29.08.2019

- http://www.orthoguidelines.org/guidelines
- Suche „all guidelines"
- 20 Treffer
- davon relevant: 0 (1 x A1, 2 x A4, 17 x A5)

British Orthopaedic Association (BOA)

Suchdatum: 29.08.2019

- https://www.boa.ac.uk/standards-guidance/nice-trauma-and-orthopaedic-guidelines.html
- Suche unter „hip"
- 13 Treffer
- davon relevant: 0 (1 x A2, 3 x A1, 9 x A5)

New Zealand Orthopaedic Association (NZOA)

Suchdatum: 29.08.2019

- https://nzoa.org.nz/guidelines

- Suche unter „NZOA Guidelines"
- 15 Treffer
- davon relevant: 1 (7 x A2, 7 x A5)
- New Zealand Orthopaedic Association (NZOA): Total hip joint arthroplasty, 2014 (9)
  → Ausschluss: A7

European League Against Rheumatism (EULAR)

Suchdatum: 205.09.2019

- https://www.eular.org/recommendations_management.cfm
- Suche unter „EULAR Recommendations: Recommendations for management 2010 bis 2019"
- 41 Treffer
- davon relevant: 2 (1 x A2, 38 x A5)
- Fernandes L et al: EULAR recommendations for the non-pharmacological core management of hip and knee osteoarthritis, Ann Rheum Dis, 2013 (14) → Einschluss
- Sakellariou G et al: EULAR recommendations for the use of imaging in the clinical management of peripheral joint osteoarthritis, Ann Rheum Dis, 2017 (15) → Einschluss

American College of Rheumatology (ACR)

Suchdatum: 05.09.2019

- https://www.rheumatology.org/Practice-Quality/Clinical-Support/Clinical-Practice-Guidelines
- Suche unter „Available ACR Guidelines"
- 14 Treffer
- davon relevant: 1 (13 x A5)
- Treffer „Osteoarthritis": 6 Dateien, 1 relevante Datei (4 x A2, 1 x A4)
- Hochberg MC et al: American College of Rheumatology 2012 recommendations for the use of nonpharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip, and knee, Arthritis Care Res, 2012 (7) → Ausschluss: A7

Osteoarthritis Research Society International (OARSI)

Suchdatum: 23.09.2019

- https://oarsi.org/education/oarsi-resources
- Suche unter „guideline"
- 7 Treffer
- davon relevant: 1 (3 x A4, 3 x A5)
- Bannuru RR et al: OARSI guidelines for the non-surgical management of knee, hip, and polyarticular osteoarthritis, Osteoarthritis Cartilage, 2019 (16) → Einschluss

Outcome Measures in Rheumatology (OMERACT)

Suchdatum: 05.09.2019

- https://omeract.org/
- Suche unter: „working groups – disease - Hip & Knee Osteoarthritis (Core Set)": keine Publikation veröffentlicht
- Suche unter "working groups – disease – Total joint replacement"
- 1 Treffer: nicht relevant (A2)

American Association of Hip and Knee Surgeons (AAHKS)

Suchdatum: 07.01.2020

- http://www.aahks.org/
- Suche unter: „guideline”:

- Treffer
- davon relevant: 0 (6 x A5)

- Suche unter „consensus”

- Verweis auf https://icmphilly.com
  Suche unter: „document”: 9 Treffer, davon relevant 2 (7 x A5)
- Second International Consensus Meeting on Musculoskeletal Infection: Proceedings of the Second International Consensus Meeting on Musculoskeletal Infection: General assembly, 2018 (6)
  → Ausschluss: A5
- Second International Consensus Meeting on Musculoskeletal Infection: Proceedings of the Second International Consensus Meeting on Musculoskeletal Infection: Hip and Knee, 2018 (17)
  → Einschluss

Anlage 3: Weiterführende Recherchen zu Messinstrumenten - konkrete Suchanfrage und gefundene Treffer

Internationale und Fachspezifische Anbieterorganisationen

Deutsche Gesellschaft für Orthopädie und Unfallchirurgie (DGOU)
Suchdatum: 17.08.2020

- https://dgou.de/q-s/leitlinien-in-o-und-u/
- Suche „Leitlinie“
- 0 Treffer

Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften (AWMF)
Suchdatum: 17.08.2020

- https://www.awmf.org/leitlinien/leitlinien-suche.html
- 1. Suche „Hüfte UND Arthrose“
- 1 Treffer: Leitlinienanmeldung: Evidenz- und konsensbasierte Indikationskriterien zur Hüfttotalendoprothese bei Coxarthrose (EKIT-Hüfte) → Ausschluss: A2
- 2. Suche „patientenberichtetes Ergebnis”
- 0 Treffer
- 3. Suche „Ergebnismessung Hüftarthrose”
- 0 Treffer

Deutsche Gesellschaft für Endoprothetik (AE)
Suchdatum: 17.08.2020
https://www.ae-germany.com/

- Suche https://www.ae-germany.com/die-ae/ae-publikationen/ae-handlungsempfehlungen
- Treffer (5 x A5)
- 1 Treffer: Lützner, J. et al., 2020: Ergebnismessung in der Hüft- und Knieendoprothetik-Empfehlung der AE-Deutschen Gesellschaft für Endoprothetik (24) → Einschluss

Organization for Economic Co-operation and Development (OECD)
Suchdatum: 17.08.2020

- https://www.oecd.org/
- 1. Suche https://www.oecd.org/health/
- 15 Treffer (14 x A5)
- 1 Treffer: PaRIS: Patient-Reported Indicators Survey
- http://www.oecd.org/health/paris/
- 8 Treffer (6 x A2 und 1 x A5)
- 1 Treffer: OECD Patient-Reported Indicator Surveys (PaRIS) Initiative, 2019: Patient-Reported Outcome Measures (PROMs) for Hip and Knee Replacement Surgery (22) → Einschluss

European League Against Rheumatism (EULAR)
Suchdatum: 17.08.2020

- https://www.eular.org
- 1.Suche https://www.eular.org/recommendations_eular_acr.cfm

- 13 Treffer (1 x A4, 12 x A2)

Osteoarthritis Research Society International (OARSI)
Suchdatum: 17.08.2020

- https://oarsi.org/education/oarsi-resources
- 1.Suche „guideline"

- Treffer (2 x A2, 1 x A3, 4 x A5)

Outcome Measures in Rheumatology (OMERACT)
Suchdatum: 17.08.2020

- https://omeract.org/
- 1. Suche „working groups – disease - Hip & Knee Osteoarthritis (Core Set)"

- 2 Treffer (2 x A5)

International Consortium for Health Outcomes Measurement (ICHOM)
Suchdatum: 17.08.2020

- https://www.ichom.org/
- 1. Suche „Ressource Library-ICHOM-Connect-Ressources"
- https://connect.ichom.org/resources/
- Suche nach „Hip and Knee Osteoarthritis"

- 1 Treffer: International Consortium for health Outcomes Measurements (ICHOM): Hip & Knee Osteoarthritis Data Collection Reference Guide (23) → Einschluss

International Society of Arthroplasty Register (ISAR)
Suchdatum: 17.08.2020

- https://www.isarhome.org/home
- 1. Suche „publications"

- 1 Treffer (1 x A5)
- 2. Suche nach „guidelines"

- 0 Treffer
- 3. Suche nach „recommendations"

- 0 Treffer

World Health Organization (WHO)
Suchdatum: 17.08.2020

- https://www.who.int/
- 1. Suche „Health Topics-Ressources-Publications"

- 15 Treffer (Topics) (13 x A5)
- 2 Treffer (Topics): Noncommunicable diseases, Health Systems
- Noncommunicable diseases: 26 Treffer (26 x A5)
- Health Systems: 19 Treffer (19 x A5)

Anlage 4: Leitliniensynopsen, Übersichtstabellen und Evidenztabellen

A1 - Tabelle 1.1: Empfehlungen (bzw. Rationalen) zur Anamnese und spezifischen Untersuchung der Coxarthrose (in alphabetischer Reihenfolge)

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
DGOOC (2019) (19)	**Empfehlung 3.2:** Für die Diagnose einer Koxarthrose sollen die Kriterien des American College of Rheumatology (ACR) erfüllt sein.	B	Not reported	Reference ACR Criteria (28-34)	Formally consensus-based guideline (no systematic literature searches have been conducted).	DELBI domain 3: 16/28 points DELBI domain 6: 7/8 points
EULAR (2017) (15)	**Recommendation 1:** Imaging is not required to make the diagnosis in patients with typical* presentation of OA. *Typical features include usage-related pain, short duration morning stiffness, age >40, symptoms affecting one or a few joints.	Not reported	III – IV (evidence from non-experimental studies descriptive studies and from expert committee reports)		**No systematic review on diagnosis criteria** was done.	DELBI domain 3: 23/28 points DELBI domain 6: 4/8 points
				Matsos 2009 (35)	A **systematic review** about the **added value of imaging over clinical findings** found a **lack of studies** on which imaging was applied in addition to clinical findings to evaluate its additional impact on the certainty of diagnosis. Therefore, the systematic **use of imaging in the diagnostic process was not recommended** in cases with typical clinical presentation. When ultrasound was added to clinical findings (one cross-sectional study of hand and feet OA), the diagnostic confidence in differentiating OA from inflammatory arthritis significantly increased.	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
NICE (2014) (11) Update of (36)	**Recommendation 1:** Diagnose osteoarthritis clinically without investigations if a person: - is 45 or over and - has activity-related joint pain and - has either no morning joint-related stiffness or morning stiffness that lasts no longer than 30 minutes. [new 2014]	Not reported	Not reported	NICE 2008 (36) Altman et al. 1987 (33)	No disagreement with a formerly given working diagnosis was raised at consultation or publication on the last guideline or in the public consultation on the update review undertaken prior to the commissioning of this update. The current recommendation was solely specified in the wording. As this working definition is in line with other international definitions, the Guideline Development Group have chosen not to undertake a review on the diagnostic accuracy of this working diagnosis.	DELBI domain 3: 27/28 points DELBI domain 6: 6/8 points
				Iagnocco et al. 2010 (37) Keen et al. 2009 (38) Kinds et al. 2011 (39) Kornaat et al. 2006 (40) Koutroumpas et al. 2010 (41) Petron et al. 2010 (42) Schiphof et al. 2008 (43)	Systematic overview about the correlation between radiographic, ultrasonographic and MRI diagnosis compared to a clinical assessment found no consistent agreement between imaging modalities and clinical diagnosis. Overall quality of outcome evidence was moderate.	

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, OA - Ostheoarthritis, ACR - American College of Rheumatology

A2- Leitliniensynopse 1.2: Empfehlungen (bzw. Rationalen) zur Differentialdiagnostik der Coxarthrose (in alphabetischer Reihenfolge)

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
DGOOC (2019) (19)	**Empfehlung 3.16:** Bei Hüftbeschwerden sollten folgende intraartikuläre Differential-diagnosen zur Koxarthrose in Betracht gezogen werden, ihr Ausschluss muss nicht dokumentiert werden: - Infektionen (bakteriell, viral) - die Chondromatose - Schenkelhals- und Azetabulum-Frakturen - die Hüftdysplasie - Labrumeinrisse - Hüftkopfnekrosen - entzündlich-rheumatische Gelenkerkrankungen - femoroazetabuläres Impingement.	B	Not reported	DeAngelis et al. 2003 (44) Hoaglund et al. 2001 (45) Newberg et al. 2003 (46) Magora et al. 1975 (47) Günther et al. 1999 (48)	Formally consensus-based guideline (no systematic literature searches have been conducted)	DELBI domain 3: 16/28 points DELBI domain 6: 7/8 points
	Empfehlung 3.17: Bei Hüftbeschwerden sollten folgende extraartikuläre Differentialdiagnosen zur Koxarthrose in Betracht gezogen werden, ihr Ausschluss muss nicht dokumentiert werden: - vertebragene Ursachen - intraabdominelle Erkrankungen - Leisten-, Obturatorius-, Schenkelhernien - pseudo-radikuläre Syndrome - das Piriformis-Syndrom - Bursitiden - Affektionen des Iliosakralgelenkes - extraartikuläre proximale Femurfrakturen - Extraartikuläre Impingement-Formen (knöcherne als auch weichteilige) - neurogene Inguinalsyndrome - Osteomyelitiden - Primärtumoren - Metastasen - das Syndrom der schnappenden Hüfte - gelenknahe Insertionstendinopathien - pelvine, inguinale, retroperitoneale Angiopathien			DeAngelis et al. 2003 (44) Hoaglund et al. 2001 (45) Newberg et al. 2003 (46) Magora et al. 1975 (47) Holder et al. 1997 (49)		

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	- das Hamstring-Syndrom.					
NICE (2014) (11)	**Recommendation 2:** Be aware that atypical features, such as a history of trauma, prolonged morning joint-related stiffness, rapid worsening of symptoms or the presence of a hot swollen joint, may indicate alternative or additional diagnoses. Important differential diagnoses include gout, other inflammatory arthritides (for example, rheumatoid arthritis), septic arthritis and malignancy (bone pain). [new 2014]	Not reported	2+	Hip: Bierma-Zeinstra 2002 (50) Others: Chan 1991 (51) de Miguel 2006 (52) Duer 2008 (53) Hayes 2005 (54) Iagnocco 2010 (37) Kornaat 2006 (40) McCrae 2010 (55) Micallef 2010 (56) Petron 2010 (42)	A systematic review about prevalence/ incidence of abnormalities detected by imaging people with OA or joint pain included ten studies. The Guideline Development Group felt that most of the evidence was of very low quality and that incidences quoted were too wide ranging to recommend any imaging modality to routinely detect alternative abnormalities. Solely one study (prospective cohort) focused on hip pain. This single study detected bursitis and neurological disorders. Overall quality of outcome evidence was moderate.	DELBI domain 3: 27/28 points DELBI domain 6: 6/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, OA - Ostheoarthritis

A3 - Tabelle 1.3: Empfehlungen (bzw. Rationalen) zur Bildgebung bei Coxarthrose (in alphabetischer Reihenfolge)

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
DGOOC (2019) (19)	**Empfehlung 3.7:** Bei anhaltenden Hüftbeschwerden, abhängig von Alter, Dauer der Schmerzen und möglichen Differentialdiagnosen, sollte eine bildgebende Diagnostik durchgeführt werden.	B	Not reported	Bernau et al. 1995 (57) Günther et al. 1997 (58) Imhof et al. 2002 (59)	Formally consensus-based guideline (no systematic literature searches have been conducted)	DELBI domain 3: 16/28 points DELBI domain 6: 7/8 points
	Empfehlung 3.8: Im Rahmen der radiologischen Diagnostik bei Verdacht auf Koxarthrose sollte zunächst eine ap-Aufnahme der betroffenen Hüfte zur Diagnosesicherung und Beurteilung des Ausmaßes der degenerativen Veränderungen angefertigt werden.			Altman et al. 1991 (29) Altman et al. 1991 (31) Croft et al. 1994 (60) Croft et al. 1990 (61) Kellgren et al. 1957 (62) Lane et al. 1993 (63) Breitenseher et al. 2002 (64) Hackenbroch et al. 1979 (65) Harris et al. 1986 (66) Mose et al. 1980 (67) Imhof et al. 2002 (59)		
	Empfehlung 3.9: Zur Differentialdiagnostik und Therapieplanung sollten darüber hinaus eine Beckenübersichtsaufnahme und/oder weitere Röntgenaufnahmen (z. B. Axialaufnahme) veranlasst werden.					
EULAR (2017) (15)	**Recommendation 2:** In atypical presentations, imaging is recommended to help confirm the diagnosis of OA and/or make alternative or additional diagnoses.	Not reported	IV (evidence from expert committee reports or opinions)	Matsos 2009 (35) (ultrasound of hand and feet rheumatological disorders)	A systematic review about the **added value of imaging for differential diagnosis over clinical evaluation did not find relevant studies.** The possible application of imaging in atypical clinical scenarios was however recognised by the experts.	DELBI domain 3: 23/28 points DELBI domain 6: 4/8 points
	Recommendation 4: If imaging is needed, conventional (plain) radiography should be used before other modalities. To make additional diagnosis, soft tissues are best imaged by US or MRI and bone by CT or MRI.		III – IV (evidence from non-experimental descriptive studies and from expert committee reports or opinions)	Only studies where surgery was used as a reference standard were illustrated. <u>2 hip studies</u> Taljanovic 2008 (68) Leydet-Quicilci 2010 (no reference, confusing citation) (23 knee studies)	Systematic review about performance of imaging in the detection of OA elementary lesions**.** Physical examination was frequently taken into account as reference standard, while surgery was considered in a minority of studies. In the **absence of appro-**	

					priate literature, the experts decided to emphasise the role of the most easily available and less costly imaging modality, proposing as second-level investigations techniques that, due to their characteristics, are more suitable for the detailed assessment of soft tissues (MRI and US) or bone (CT).	

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, OA - Ostheoarthritis, ap - anterior–posterior, US - Ultrasound, MRI - Magnetic Resonance Imaging, CT - Computertomographie

A4 - Leitliniensynopse 1.4: Empfehlungen (bzw. Rationalen) zur weiterführenden Bildgebung (MRT) bei Coxarthrose (in alphabetischer Reihenfolge)

Guideline	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
DGOOC (2019) (19)	**Empfehlung 3.11:** Die Indikation zur MRT kann bestehen: - bei Diskrepanz zwischen Klinik und Röntgenbild bzw. CT - bei ausbleibender Besserung unter Standardtherapie - bei Gelenkbeschwerden, deren Ursache nach Anamnese sowie klinischer und radiologischer Untersuchung noch unklar ist. **Empfehlung 3.12:** Die Indikation zur CT kann bestehen: - bei Diskrepanz zwischen Klinik und Röntgenbild bzw. MRT - bei ausbleibender Besserung unter Standardtherapie - bei Gelenkbeschwerden, deren Ursache nach Anamnese sowie klinischer und radiologischer Untersuchung noch unklar ist.	0	Not reported	---	Formally consensus-based guideline (no systematic literature searches have been conducted).	DELBI domain 3: 16/28 points DELBI domain 6: 7/8 points
EULAR (2017) (15)	**Recommendation 4:** If imaging is needed, conventional (plain) radiography should be used before other modalities. To make additional diagnosis, soft tissues are best imaged by US or MRI and bone by CT or MRI.	Not reported	III – IV (evidence from non-experimental descriptive studies and from expert committee reports or opinions)	Only studies where surgery was used as a reference standard were illustrated. <u>2 hip studies</u> Taljanovic 2008 (68) Leydet-Quicilci 2010 (no reference, confusing citation) (23 knee studies)	Systematic review about performance of imaging in the detection of OA elementary lesions**.** Physical examination was frequently taken into account as reference standard, while surgery was considered in a minority of studies. In the **absence of appropriate literature**, the experts decided to emphasise the role of the most easily available and less costly imaging modality, proposing as second-level investigations techniques that, due to their characteristics, are more suitable for the detailed assessment of soft tissues (MRI and US) or bone (CT).	DELBI domain 3: 23/28 points DELBI domain 6: 4/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, OA - Ostheoarthritis, ap - anterior–posterior, US - Ultrasound, MRI - Magnetic Resonance Imaging, CT - Computertomographie

A5 - Tabelle 1.5: Empfehlung zur diagnostischen Infiltration mit einem Lokalanästhetikum

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
DGOOC (2019) (19)	**Empfehlung 5.9:** Zur differentialdiagnostischen Sicherung der intraartikulären Schmerzgenese sollte im Zweifelsfall eine fluoroskopisch oder sonographisch gesteuerte Punktion des Hüftgelenkes mit Infiltration eines Lokalanästhetikums erfolgen.	B	Not reported	--	Formally consensus-based guideline (no systematic literature searches have been conducted)	DELBI domain 3: 16/28 points DELBI domain 6: 7/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung

A6 - Tabelle 1.6: Empfehlungen (bzw. Rationalen) zur Beurteilung des Schweregrades der Coxarthrose (in alphabetischer Reihenfolge)

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
DGOOC (2019) (19)	**Empfehlung 3.4:** Bei Angabe von Hüftbeschwerden sollten in der speziellen Anamnese folgende Daten erfragt werden: - Schmerzen in der Hüfte - Ruhe-/Nachtschmerzen - länger als 30 min. und kürzer als 60 min. andauernde Morgensteifigkeit in der Hüfte - eine schmerzhafte Innenrotation - eine Bewegungseinschränkung - die maximale Gehstrecke - Schmerzhaftigkeit anderer Gelenke inkl. Rückenschmerzen - eine vorausgegangene Behandlung des betroffenen Gelenkes.	B	Not reported	Altman et al. 1991 (28) Altman et al. 1991 (29) Altman et al. 1991 (31) Altman et al. 1995 (32) Altman et al. 1987 (33) Günther et al. 2002 (69) Harris et al. 1969 (70) Larson et al. 1963 (71) Lequesne et al. 1987 (72) Bellamy et al. 1986 (73) Bellamy et al. 1988 (74)	Formally consensus-based guideline (no systematic literature searches have been conducted).	DELBI domain 3: 16/28 points DELBI domain 6: 7/8 points
	Empfehlung 3.6: Die spezielle klinische Untersuchung bei Vorliegen von Hüftbeschwerden sollte folgende Punkte umfassen: - Gangbild - Beckenstand und Beinlänge - Beinachse - Trophik und Funktion der Bein- und Glutealmuskulatur - Leistendruck-, Trochanterklopf- und -druckschmerz - Bewegungsausmaß der betroffenen Hüfte - Bewegungsausmaß der kontralateralen Hüfte - Bewegungsausmaß der benachbarten Gelenke.			Harris et al. 1969 (70) Larson et al. 1963 (71) Lequesne et al. 1987 (72) Horstmann et al. 2001 (75) Grimmig et al. 2002 (76) Croft et al. 1996 (77)		

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung

A7 - Evidenztabelle 1.7: Systematische Reviews und Meta-Analysen zu Assoziation zwischen radiologischem Schweregrad der Coxarthrose und Outcome nach Hüft-TEP (in alphabetischer Reihenfolge)

Study	Type of study	Search period (up to)	Included studies	Population	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Hofstede (78)	SR	August 2014	35 prospective studies	Primary hip osteoarthritis (OA)	Functional and clinical outcomes Predictors: i.e. patient characteristics, radiological images, questionnaires or physical exams	Main results of seven studies: Preoperative **function** and **radiological OA** were **predictors for** outcomes after THA with the most consistent findings in studies with low risk of bias.	Follow-up of at least one year Risk of Bias and confounding was assessed for two domains (follow-up rate and looking at independent factors (e.g. by adjustments)). Only nine studies had low risk of bias.	Low	2+
Lungu (79)	SR	April 2015	22 prospective studies	Primary hip OA	Validated disease-specific patient-reported outcome measures assessing pain and/or disability Predictors not defined a priori	A lower radiographic OA severity was associated to poor outcomes in 3 out of 4 studies.	Follow-up should be ranged between 3 and 24 months Critical appraisal of study quality were assessed with a modified version of the Methodology checklist for prognostic studies (domains: study participation, study attrition, prognostic factor measurement, outcome measurement, confounding measurement and account, analysis)	Critically low	2+

Notes: AMSTAR - A Measurement Tool for the Assessment of Multiple Systematic Reviews, MA - Meta-Analysis, OA - Osteoarthritis, SIGN - Scottish Intercollegiate Guidelines Network, SR - Systematic Review, THA - Total Hip Arthroplasty

A8 - Leitliniensynopse 1.8: Empfehlungen zur Indikation einer Hüft-TEP bei Hüftkopfnekrose

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
DGOOC (2019) (18)	Ab einem ARCO Stadium III c oder in Stadium IV sollte keine Core decompression mehr erfolgen. In diesen Fällen sollte die Indikation zur Implantation einer Hüft-TEP überprüft werden.	B	2++	Schneider et al. 2000 (80) Scully et al. 1998 (81) Koo et al. 1995 (82) Stulberg et al. 1991 (83) Aaron et al. 1991 (84) Beltran et al. 1990 (85) Rajagopal et al. 2012 (86) Robinson et al. 1992 (87)	Systematic literature searches concerning Core decompression as therapy for femoral head necrosis (search period of the guideline update June 2013 to April 2017)	DELBI domain 3: 24/28 points DELBI domain 6: 7/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung

A9 - Leitliniensynopse 2.1: Empfehlungen (bzw. Rationalen) zur Erhebung des Leidensdrucks bei Coxarthrose (in alphabetischer Reihenfolge)

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
DGOOC (2019) (19)	**Empfehlung 3.4:** Bei Angabe von Hüftbeschwerden sollten in der speziellen Anamnese folgende Daten erfragt werden: - Schmerzen in der Hüfte - Ruhe-/Nachtschmerzen - länger als 30 min. und kürzer als 60 min. andauernde Morgensteifigkeit in der Hüfte - eine schmerzhafte Innenrotation - eine Bewegungseinschränkung - die maximale Gehstrecke - Schmerzhaftigkeit anderer Gelenke inkl. Rückenschmerzen - eine vorausgegangene Behandlung des betroffenen Gelenkes.	Not done	Not reported		Formally consensus-based guideline (no systematic literature searches have been conducted).	DELBI domain 3: 16/28 points DELBI domain 6: 7/8 points
	Empfehlung 3.6: Die spezielle klinische Untersuchung bei Vorliegen von Hüftbeschwerden sollte folgende Punkte umfassen: - Gangbild - Beckenstand und Beinlänge - Beinachse - Trophik und Funktion der Bein- und Glutealmuskulatur - Leistendruck-, Trochanterklopf- und -druckschmerz - Bewegungsausmaß der betroffenen Hüfte - Bewegungsausmaß der kontralateralen Hüfte - Bewegungsausmaß der benachbarten Gelenke.	Not done	Not reported		Formally consensus-based guideline (no systematic literature searches have been conducted).	
	Empfehlung 3.15: Für die klinische Stadieneinteilung der Koxarthrose können folgende Scores verwendet werden: - Western Ontario Mac Master Arthritis Center (WOMAC) Arthrose-Index von Bellamy und Buchanan (1986) - Harris Hip Score (HHS, 1969) - Score nach Merle d'Aubignè - Score nach Lequesne et al. (1987) - SF-36-Fragebogen.	Not done	Not reported		Formally consensus-based guideline (no systematic literature searches have been conducted).	
EULAR (2013) (14)	**Recommendation 1** In people with hip or knee OA, initial assessments should include: a) physical status (including pain; fatigue; sleep quality; lower limb joint status (foot, knee, hip); mobility;	Not reported	Ib	<u>One RCT</u> Hill et al. 2009 (88)	Systematic review on how a comprehensive assessment of people with hip or knee OA should best be carried out.	DELBI domain 3: 23/28 points DELBI domain 6:

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	strength; joint alignment; proprioception and posture; comorbidities; weight) b) activities of daily living c) participation (work/education, leisure, social roles) d) mood e) Health education needs, health beliefs and motivation to self-manage.					4/8 points
NICE (2014) (11) **Update of (36)**	**Recommendation 3:** Assess the effect of osteoarthritis on the person's function, quality of life, occupation, mood, relationships and leisure activities. Use Figure 2 as an aid to prompt questions that should be asked as part of the holistic assessment of a person with osteoarthritis. [2008]	Not reported	Not reported		This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. No systematic review was performed.	DELBI domain 3: 27/28 points DELBI domain 6: 6/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, OA - Osteoarthritis, RCT - Randomised Controled Trial

A 10 - Tabelle 2.2a: Empfehlungen (bzw. Rationalen) zu Patient-Reported Outcome Measures (PROMS)

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
DGOOC (2019) (19)	**Empfehlung 3.15:** Für die klinische Stadieneinteilung der Koxarthrose können folgende Scores verwendet werden: - Western Ontario Mac Master Arthritis Center (WOMAC) Arthrose-Index von Bellamy und Buchanan (1986) - Harris Hip Score (HHS, 1969) - Score nach Merle d'Aubignè - Score nach Lequesne et al. (1987) - SF-36-Fragebogen.	Not done	Not reported	-	Formally consensus-based guideline (no systematic literature searches have been conducted).	DELBI domain 3: 16/28 points DELBI domain 6: 7/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung

A 11 - Tabelle 2.2b: Empfohlene PROMs und Einzelfragen (Single-Item-Questions)

Leitlinie/ Empfehlung	Generische Instrumente					Krankheitsspezifische Instrumente							Einzelfragen (Single-Item-Questions)			
	EQ-5D	SF-36	SF-12	VR-12	PROMIS-10	OHS	HOOS	HOOS-PS	HOOS-JR	HOOS-12	WOMAC	HHS	Allgemeiner Gesundheitszustand	Schmerzstärke (in den letzten 4 Wochen)	maximale Gehstrecke bis starker Schmerz einsetzt	Schmerz VAS oder NRS
DGOOC 2019 (19)		**X**									**X**	**X**				
RACGP 2018 (12)							**X**				**X**					**X**
PaRIS/ OECD 2019 (22)	**X**		**(X)**	**(X)**	**(X)**	**X**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**		**X**	**(X)**	**(X)**	
ICHOM (23)	**X**		**X**	**X**				**X**								**X**
AE (24)	**(X)**	**(X)**	**(X)**			**X**	**(X)**	**(X)**			**(X)**					

A 12 - Evidenztabelle 2.2c: Systematisches Review zu Patient-Reported Outcome Measures (PROMS)

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Gagnier (89)	SR	April 2017	73 studies evaluating psychometric properties	THA	Patient-reported outcome measures	WOMAC (5 properties with positive evidence) **Moderate positive evidence** for **responsiveness and criterion validity**. **Limited positive evidence** for **internal consistency, reliability,** hypothesis testing **(construct validity**). **It is the highest-quality instrument for THA patients.** HOOS (4 properties with positive evidence) **Strong positive rating** to **content validity**, **moderate positive rating** to **reliability**, hypothesis testing (**construct validity**). **Limited positive evidence** for **Interpretability**. OHS (3 properties with positive evidence) A **strong positive rating** was given to hypothesis testing (**construct validity**) and **reliability**. **Limited positive evidence** for **content validity**. HHS and HOOS-JR (2 properties with positive evidence) **Limited positive evidence** for hypothesis testing (**construct validity**) and **criterion validity**. HOOS-PS (3 properties with positive evidence) **Moderate positive evidence** for hypothesis testing (**construct validity**), **limited positive evidence** for **reliability and interpretability**	The methodological quality of the studies and the evidence of the psychometric properties were summarized and appraised using the COSMIN (COnsensus-based Standards for the selection of health Measurement INstruments) methods	Moderate	2+

A 13 - Leitliniensynopse 2.3: Empfehlungen (bzw. Rationalen) zur Indikation anhand von Schmerzen, Funktionseinschränkungen, Einschränkungen der ATL´s und der gesundheitsbezogenen Lebensqualität

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
NICE (2014) (11) **Update of (36)**	**Recommendation 37:** Consider referral for joint surgery for people with osteoarthritis who experience joint symptoms (pain, stiffness and reduced function) that have a substantial impact on their quality of life and are refractory to non-surgical treatment. [2008, amended 2014]	Not reported	3	One observational study (90) 4 expert opinions (91-94)	This recommendation was published in the previous version of this guideline and amended in 2014. Systematic review on symptoms and function as indications for surgery in hip osteoarthritis patients. Evidence level: very little evidence	DELBI domain 3: 27/28 points DELBI domain 6: 6/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung

A 14 - Tabelle 2.4: Empfehlungen (bzw. Rationalen) zum Einfluss der präoperativen Symptomausprägung auf Outcome nach Hüft-TEP

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
NICE (2014) (11) Update of (36)	**Recommendation 38:** Refer for consideration of joint surgery before there is prolonged and established functional limitation and severe pain. [2008, amended 2014]	Not reported	Not reported	Caracciolo and Giaquinto 2005 (95) Nilsdotter et al. 2001 (96) Roder et al. 2007 (97)	This recommendation was published in the previous version of this guideline and amended in 2014. Systematic review on symptoms, function and quality of life as predictors of benefits and harms from osteoarthritis-related surgery. Evidence level: very little Evidence	DELBI domain 3: 27/28 points DELBI domain 6: 6/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung

A 15 - Evidenztabelle 2.4: Systematische Reviews zum Einfluss der präoperativen Symptomausprägung auf Outcome nach Hüft-TEP
(in alphabetischer Reihenfolge)

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Buirs (98)	SR	June 2015	33 observational studies	THA	Functional Outcome Predictors: at least one variable that was considered as a predictor	**17 studies evaluated preoperative physical function as a possible predictor** of functional outcome after THA. **Of the 17 studies, 16 found a statistically significant correlation** between preoperative physical function and the functional outcome (< 24 months: 13 studies and > 24 months: 3 studies).	Level of evidence of all studies included was determined by using the GRADE rating scheme.	Low	2+
Hofstede (78)	SR	August 2014	35 prospective studies	Primary hip osteoarthritis (OA)	Functional and clinical outcomes Predictors: function, pain	**13 studies evaluated an effect of preoperative function on outcomes. Two studies had low risk of bias.** One study showed that patients with **worse preoperative function had a greater improvement** (this was also found in three high risk of bias studies). The other study showed that although **patients with worse preoperative function had a greater improvement, they did not achieve the postoperative level of those with higher preoperative function**. This was confirmed in six high risk of bias studies. Four studies did not find associations between function and various outcomes. None of these studies had low risk of bias. **Six studies reported an effect of preoperative pain on outcomes. The results were conflicting.**	Follow-up of at least one year Risk of Bias and confounding was assessed for two domains (follow-up rate and looking at independent factors (e.g. by adjustments)).	Low	2+
Lungu (79)	SR	April 2015	22	THA	Patient-reported outcomes pain and/or function Predictors: preoperative determinants	**Significant determinants of poor outcomes** 3 months to two years following THA <u>concerning pain:</u> - **Worse preoperative pain** (four studies)	Study quality was assessed with the modified version of the Methodology checklist for prognostic studies.	Critically low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
						- **Better preoperative pain** (one study) - **Worse bodily pain** (one study) <u>concerning function:</u> - **Worse preoperative function** (eight studies) <u>concerning pain and function combined:</u> - **Worse preoperative pain/function** (one study) <u>Concerning general health</u> - **Worse general health** (four studies)	Study heterogeneity limited the pooled assessment of the strength of associations between the preoperative variables and THA outcomes.		

Notes: AMSTAR - A Measurement Tool for the Assessment of Multiple Systematic Reviews, MA - Meta-Analysis, OA - Osteoarthritis, SIGN - Scottish Intercollegiate Guidelines Network, SR - Systematic Review, THA - Total Hip Arthroplasty

A 16 - Leitliniensynopse 3.1: Empfehlungen (bzw. Rationalen) zur konservativen Therapie bei Coxarthrose (in alphabetischer Reihenfolge)

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
AAOS (2017) (13)	**NON-NARCOTIC MANAGEMENT** Strong evidence supports that NSAIDs improve short-term pain, function, or both in patients with symptomatic osteoarthritis of the hip.	Not reported	Not reported	Schnitzer et al. 2011 (99) Baerwald et al. 2010 (100) Svensson et al. 2006 (101) Klein et al. 2006 (102) Kivitz et al. 2001 (103)	Strength of Recommendation: strong Evidence from two or more "High" strength studies with consistent findings for recommending for or against the intervention	DELBI domain 3: 26/28 points DELBI domain 6: 6/8 points
	GLUCOSAMINE SULFATE Moderate strength evidence does not support the use of glucosamine sulfate because it did not perform better than placebo for improving function, reducing stiffness and decreasing pain for patients with symptomatic osteoarthritis of the hip.	Not reported	Not reported	Rozendaal et al. 2008 (104)	Strength of Recommendation: moderate Evidence from two or more "Moderate" strength studies with consistent findings, or evidence from a single "High" quality study for recommending for or against the intervention.	
	PHYSICAL THERAPY AS A CONSERVATIVE TREATMENT Strong evidence supports the use of physical therapy as a treatment to improve function and reduce pain for patients with osteoarthritis of the hip and mild to moderate symptoms.	Not reported	Not reported	<u>9 high quality studies</u> Bennell et al. 2014 (105) Beselga et al. 2016 (106) Fernandes et al. 2010 (107) French et al. 2013 (108) Hoeksma et al. 2005 (109) Köybasi et al. 2010 (110) Pister et al. 2010 (111) Poulsen et al. 2013 (112) Svege et al. 2015 (113) <u>2 moderate quality studies</u> Svege et al. 2016 (114) Tak et al. 2005 (115)	Strength of Recommendation: strong Evidence from two or more "High" strength studies with consistent findings for recommending for or against the intervention.	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
EULAR (2013) (14)	**Recommendation 3:** All people with knee/hip OA should receive an individualized management plan (a package of care) that includes the core non-pharmacological approaches, specifically: - information and education regarding OA - addressing maintenance and pacing of activity - addressing a regular individualised exercise regimen - addressing weight loss if overweight or obese - reduction of adverse mechanical factors (eg, appropriate footwear) - consideration of walking aids and assistive technology.	Not reported	Ib	20 RCTs on the combination of patient education or self-management intervention plus exercise 2 hip studies: Juhakoski et al. 2011 (116), Fernandes et al. 2010 (107) 6 hip and knee studies: Van Baar et al. 1998 (117), Van Baar et al. 2001 (118), Walsh et al. 2006 (119), Hopman-Rock et al. 2000 (120), Hughes et al. 2004 (121), Hughes et al. 2006 (122)	Systematic review on effectiveness of combination of patient education or self-management intervention with/ without exercise in hip and knee OA.	DELBI domain 3: 23/28 points DELBI domain 6: 4/8 points
				4 RCTs on additional advice from a dietician for overweight or obese patients hip and knee studies: Tak et al. 2005 (115), Messier et al. 2004 (123), Miller 2006 (124), Rejeski et al. 2002 (125) 1 Meta-Analysis: Christensen et al. 2007 (126) 6 RCTs on knee OA: Miller et al. 2006 (124), Foy et al. 2011 (127), Bliddal et al. 2011 (128), Jenkinson et al. 2009 (129), Shea et al. 2010 (130), Riecke et al. 2010 (131)	Systematic review on effectiveness of weight-loss programmes.	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
				In patients with hip OA there is no evidence to support the effect of specific shoes or insoles on pain or function.	Systematic review on effectiveness appropriate footwear. Expert opinion	
				There are no clinical trials to substantiate these elements. However, the group was unanimous in its view that in all patients with hip or knee OA walking aids, assistive technology and adaptations at home and/or at work should be considered systematically and recurrently.	Systematic review on assistive technology and adaptations at home and/or at work Expert opinion	
NICE (2014) (11) **Update of (36)**	**Recommendation 6:** Offer advice on the following core treatments to all people with clinical osteoarthritis. - Access to appropriate information (see recommendation 7). - Activity and exercise (see recommendation 12). - Interventions to achieve weight loss if the person is overweight or obese (see recommendation 14 and Obesity [NICE clinical guideline 43]). [2008, amended 2014]	Not reported	Not reported	References see following Recommendation 7, 12, 14	This recommendation was published in the previous version of this guideline and was amended in 2014.	DELBI domain 3: 27/28 points DELBI domain 6: 6/8 points

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Recommendation 7: Offer accurate verbal and written information to all people with osteoarthritis to enhance understanding of the condition and its management, and to counter misconceptions, such as that it inevitably progresses and cannot be treated. Ensure that information sharing is an ongoing, integral part of the management plan rather than a single event at time of presentation. [2008]	Not reported	Not reported	2 Meta-Analysis: Chodosh et al. 2005 (132) Superio-Cabuslay et al.1996 (133) 6 RCTs: Buszewicz et al. 2006 (134) Calfas et al. 1992 (135) Heuts et al. 2005 (136) Maisiak et al. 1996 (137) Nunez et al. 2006 (138) Victor et al.2005 (139) 1 implementation Study De Jong et al. 2004 (140) 1 observational study Hampson et al. 1993 (141)	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Systematic review about effectiveness of patient information provision/ education methods/ patient self-management programmes with respect to symptoms, function, quality of life Evidence strength: significant body of evidence	
	Recommendation 9: Agree individualised self-management strategies with the person with osteoarthritis. Ensure that positive behavioural changes, such as exercise, weight loss, use of suitable footwear and pacing, are appropriately targeted. [2008]	Not reported	Not reported	2 Meta-Analysis: Chodosh et al. 2005 (132) Superio-Cabuslay et al.1996 (133) 6 RCTs: Buszewicz et al. 2006 (134) Calfas et al. 1992 (135) Heuts et al. 2005 (136) Maisiak et al. 1996 (137) Nunez et al. 2006 (138) Victor et al.2005 (139) 1 implementation Study De Jong et al. 2004 (140) 1 observational study Hampson et al. 1993 (141)	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Evidence level: limited evidence	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Recommendation 11: The use of local heat or cold should be considered as an adjunct to core treatments. [2008]	Not reported	Not reported	One meta-analysis Brosseau et al. 2003 (142) one non-comparative study Martin et al. 1998 (143)	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Evidence level: no economic evidence available	
	Recommendation 12: Advise people with osteoarthritis to exercise as a core treatment (see recommendation 6), irrespective of age, comorbidity, pain severity or disability. Exercise should include: - local muscle strengthening and - general aerobic fitness. It has not been specified whether exercise should be provided by the NHS or whether the healthcare professional should provide advice and encouragement to the person to obtain and carry out the intervention themselves. Exercise has been found to be beneficial but the clinician needs to make a judgement in each case on how to effectively ensure participation. This will depend upon the person's individual needs, circumstances and self-motivation, and the availability of local facilities. [2008]	Not reported	Not reported	Review on exercise therapy vs.sham exercise or no treatment control groups: 1 meta-analysis (144) 20 RCTs (115, 118, 123, 125, 145-160) Review on exercise therapy vs. other osteoarthritis therapies: 9 RCTs (150, 154, 155, 158, 159, 161-164)	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Evidence strength: limited evidence	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Recommendation 13: Manipulation and stretching should be considered as an adjunct to core treatments, particularly for osteoarthritis of the hip. [2008]	Not reported	Not reported	Two hip studies: 1 RCT: Hoeksma et al. 2004 (165) 1 case-series: MacDonald et al. 2006 (166)	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Evidence level: limited evidence for hip OA	
	Recommendation 14: Offer interventions to achieve weight loss as a core treatment (see recommendation 6) for people who are obese or overweight. [2008]	Not reported	Not reported	Only studies on knee OA 1 meta-analysis: Christensen et al. 2007 (126) 1 RCT: Rejeski et al. 2002 (125) NICE Clinical guideline [CG189] Obesity: identification, assessment and management (167)	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Evidence strength: no clear evidence	
	Recommendation 15: Healthcare professionals should consider the use of transcutaneous electrical nerve stimulation (TENS) as an adjunct to core treatments for pain relief. [2008]	Not reported	Not reported	1 MA: Osiri et al. 2000 (168) three RCTs: Cheing et al. 2002 (169) Cheing and Hui-Chan 2004 (170) Paker et al. 2006 (171)	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Evidence level: conflicting evidence	
	Recommendation 19: People with osteoarthritis who have biomechanical joint pain or instability should be considered for assessment for bracing/joint supports/insoles as an adjunct to their core treatments. [2008]	Not reported	Not reported	No hip studies	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Evidence level: some evidence	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Recommendation 20: Assistive devices (for example, walking sticks and tap turners) should be considered as adjuncts to core treatments for people with osteoarthritis who have specific problems with activities of daily living. If needen, seek expert advice in this context (for example, from occupational therapists or Disability Equipment Assessment Centres). [2008]	Not reported	Not reported	Veitiene and Tamulaitiene 2005 (172) Tallon et al.2000 (173) Sutton et al. 2002 (174) Mann et al. 1995 (175)	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Evidence level: some evidence	
	Recommendation 22: Healthcare professionals should consider offering paracetamol for pain relief in addition to core treatments (see Figure 3 in section 4.1.2); regular dosing may be required. Paracetamol and/or topical non-steroidal anti-inflammatory drugs (NSAIDs) should be considered ahead of oral NSAIDs, cyclo-oxygenase-2 (COX-2) inhibitors or opioids. [2008]	Not reported	Not reported	<u>Systematic review on paracetamol vs placebo</u> Towheed et al. 2006 (176) Altman et al. 2007 (177) Golden et al. 2004 (178) <u>Systematic review on paracetamol vs NSAIDs including COX-2 inhibitors</u> Towheed et al. 2006 (179) Temple et al. 2006 (180) March et al. 1994 (181) Nikles et al. 2005 (182) Wegman et al. 2003 (183) Yelland et al. 2007 (184) Fries and Bruce 2003 (185)	Evidence level: good amount of evidence from RCTs	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Recommendation 23: If paracetamol or topical NSAIDs are insufficient for pain relief for people with osteoarthritis, then the addition of opioid analgesics should be considered. Risks and benefits should be considered, particularly in older people. [2008]	Not reported	Not reported	Systematic review on paracetamol vs opioids, and paracetamol-opioid combinations Bianchi et al. 2003 (186) Boureau et al. 1990 (187) Kjaersgaard et al. 1990 (188) Parr et al. 1989 (189) Irani 1980 (190) Cepeda et al. 2006 (191) McIntyre et al. 1981 (192) Systematic review on opioids Jensen and Ginsberg 1994 (193) Cepeda et al. 2006 (191) Bird et al. 1995 (194) Gana et al. 2006 (195) Bjordal et al 2007 (196)	Evidence level: poor evidence	
OARSI (2019) (16)	**Use of oral NSAIDs** was conditionally recommended for Hip OA patients without comorbidities and for patients with widespread pain and/or depression. In both treatment profiles, **non-selective NSAIDs preferably with the addition of a PPI, and selective COX-2 inhibitors** were conditionally recommended. For patients with gastrointestinal comorbidities, the use of **oral NSAIDs was restricted to selective COX-2 inhibitors or non-selective NSAIDs in combination with a PPI.**	Conditional	Very low	Three hip studies - All NSAIDs: Baerwald et al. 2010 (100) Kivitz et al. 2001 (103) Schnitzer et al. 2011 (99) Two hip studies - ONLY COX-2: Kivitz et al. 2001 (103) Schnitzer et al. 2011 (99) Two hip studies - ONLY Non-selective NSAIDs: Baerwald et al. 2010 (100) Kivitz et al. 2001 (103)	Systematic review about benefits and harms of Oral NSAIDs in the management of patients with hip OA	DELBI domain 3: 23/28 points DELBI domain 6: 5/8 points

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Conditional Good Clinical Practice Statement NSAIDs with more favorable safety profiles may be used in high-risk patients (including patients with frailty) at the lowest possible dose, for the shortest possible treatment duration, for symptomatic relief.	Expert opinion	Not applicable		Expert opinion	
	Mind-body exercise (Tai Chi or Yoga) was conditionally recommended for Hip OA patients in all comorbidity subgroups.	Conditional	Low	Fransen et al. 2007 (148)	Systematic review about benefits and harms of Mind-body Exercise in the management of patients with hip OA	
	Self-management programs were also conditionally recommended for patients in all comorbidity subgroups.	Conditional	Moderate	Poulsen et al. 2013 (112)	Systematic review about benefits and harms of Self-Management Programs in the management of patients with hip OA	
	Cognitive behavioral therapy was only recommended for patients with widespread pain and/or depression.	Conditional	Moderate	Broderick et al. 2014 (197) Gay et al. 2002 (198) Murphy et al. 2016 (199) Rini et al. 2015 (200) Allen et al. 2016 (201)	Systematic review about benefits and harms of Cognitive Behavioral Therapy in the management of patients with hip OA	
	The **use of gait aids** was recommended in patients from each comorbidity subgroup, with the exception of patients with widespread pain and/or depression.	Expert opinion	Not applicable		no randomized controlled trial data were found	
	Conditional Good Clinical Practice Statement **Dietary Weight Management** weight management may be recommended for certain individuals (e.g., individuals presenting with body mass index ≥ 30 kg/m^2) of any comorbidity subgroup as a part of a healthy lifestyle regimen	Expert opinion	Not applicable		No randomized controlled trial data that could provide supportive data. Expert opinion	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
RACGP (2018) (12)	**Land-based exercise** We strongly recommend offering land-based exercise for all people with hip OA to improve pain and function, regardless of their age, structural disease severity, functional status or pain levels. Exercise has also been found to be beneficial for other comorbidities and overall health.	Strong (when combining all studies of land-based exercise)	Moderate (land-based)	1 meta-analysis: Fransen et al. 2014 (202)	Systematic review on benefits and harms of all land-based exercise in the management of patients with knee OA.	DELBI domain 3: 24/28 points DELBI domain 6: 7/8 points
	Weight management – hip and knee We strongly recommend weight management for people with knee and/or hip OA. For those who are overweight (BMI ≥25 kg/m^2) or obese (BMI ≥30 kg/m^2), a minimum weight loss target of 5–7.5% of body weight is recommended.	Strong	Very low	Bliddal et al. 2011 (128) Messier et al. 2004 (123) Miller et al. 2006 (124)	Systematic review on benefits and harms of weight management of patients with knee OA.	
	Combination weight management plus exercise It is beneficial to achieve a greater amount of weight loss given that a relationship exists between the amount of weight loss and symptomatic benefits. **Weight loss should be combined with exercise for greater benefits.** For people of healthy body weight, education about the importance of maintaining healthy body weight is essential.	Conditional		Messier et al. 2004 (123) Messier et al. 2013 (203) Focht et al. 2005 (147)	Systematic review on benefits and harms of combination weight management and exercise interventions compared to mono-therapy of patients with knee OA.	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Cognitive behavioural therapy (CBT) It may be appropriate to offer CBT for some people with knee and/or hip OA. Clinicians should consider whether CBT is appropriate, taking into account psychological comorbidities and personal preference. They should be cognisant of issues related to cost and access. It is recommended that CBT is combined with exercise to improve outcomes. CBT may be offered face-to-face or via online programs.	Conditional	Very low	Broderick et al. 2014 (197) Gay et al. 2002 (198) Murphy et al. 2016 (199) Rini et al. 2015 (200) Allen et al. 2016 (201)	Systematic review on benefits and harms of cognitive behavioural therapy (CBT) in the management of patients with hip and knee OA	
	Aquatic exercise/hydrotherapy It may be appropriate to offer aquatic exercise/ hydrotherapy for some people with knee and/or hip OA. This will depend upon personal preference and the availability of local facilities	Conditional	low	Meta-Analysis Bartels et al. 2016 (204)	Systematic review on benefits and harms of aquatic exercise/ hydrotherapy in the management of patients with hip and knee OA	
	Massage therapy It may be appropriate to offer a short course of massage therapy for some people with knee and/or hip OA. This should be considered only as an adjunctive treatment to enable engagement with active management strategies, and only for short term, cognisant of issues related to cost and access.	Conditional	low	Atkins et al. 2013 (205) Perlman et al. 2006 (206) Perlman et al. 2012 (207) Yip, YB. and Tam, AC. 2008 (208)	Systematic review on benefits and harms of massage in the management of patients with hip and knee OA	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Manual Therapy It may be appropriate to offer a short course of manual therapy (stretching, soft tissue and/or joint mobilisation and/or manipulation) for some people with knee and/or hip OA. This should be considered only as an adjunctive treatment to enable engagement with active management strategies and only for short term, cognisant of issues related to cost and access.	Conditional	low	Poulsen et al. 2013 (112) Abbott et al. 2013 (209)	Systematic review on benefits and harms of manipulation and mobilisation in the management of patients with hip OA	
	Heat therapy It may be appropriate to offer local heat therapy (eg hot packs) as a self-management home strategy for some people with knee and/or hip OA. This should be considered only as an adjunctive treatment.	Conditional	Very low	Denegar et al. 2010 (210) Mazzuca et al. 2004 (211) Yildirim et al. 2010 (212)	Systematic review on benefits and harms of local hot application in the management of patients with hip and knee OA	
	Assistive walking device It may be appropriate to offer an assistive walking device (eg cane) for some people with knee and/or hip OA, depending on a person's preference and capability.	Conditional	Very low	Jones et al. 2012 (213)	Systematic review on benefits and harms of walking cane/stick in the management of patients with hip and knee OA	
	TENS It may be appropriate to offer TENS that can be used at home for some people with knee and/or hip OA. Clinicians need to provide sufficient instructions on self-use, and consider individual accessibility and affordability.	Conditional	Very low	no direct evidence is available from trials in people with hip OA (six knee studies)	Systematic review on benefits and harms of transcutaneous electrical nerve stimulation (TENS) in the management of patients with hip and knee OA	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Self-management education programs We are unable to recommend either for or against formal face-to-face self-management education programs for people with knee and/or hip osteoarthritis (OA).	Conditional (neutral)	Very low	Poulsen et al. 2013 (112)	The working group felt that ongoing education and advice provided by the clinician remains integral to person-centred care and shared decision-making. No systematic review	
	Oral NSAIDs including COX-2 inhibitors It may be appropriate to offer oral NSAIDs for some people with knee and/or hip OA It might be reasonable to trial oral NSAIDs at the lowest effective dose for a short period, then discontinue use if not effective. Clinicians also need to inform people, monitor and capture adverse events, especially gastrointestinal, renal and cardiovascular, which may be associated with use of NSAIDs.	Conditional	Moderate	Baerwald et al. 2010 (100) Makarowski et al 2002 (214) Schnitzer et al. 2011 (99)	Systematic review on benefits and harms of oral NSAIDs including COX-2 inhibitors in the management of patients with hip and knee OA	
	Duloxetine It may be appropriate to offer duloxetine for some people with knee and/or hip OA Duloxetine currently does not have an indication via the TGA for OA, and should be considered as an investigational medication only. It could be considered for some people with knee and/or hip OA when other forms of pain relief are inadequate	Conditional	low	There is no direct randomised controlled trial (RCT) evidence for hip OA (three knee studies)	Systematic review on benefits and harms of duloxetine in the management of patients with hip and knee OA	

Notes: BMI - Body Mass Index, DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, OA - Osteoarthritis, RCT - Randomised Controled Trial

A 17 - Leitliniensynopse 3.2: Empfehlungen (bzw. Rationalen) zur Kerntherapie bei Coxarthrose (in alphabetischer Reihenfolge)

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
EULAR (2013) (14)	**Recommendation 3:** All people with knee/hip OA should receive an individualized management plan (a package of care) that includes the core non-pharmacological approaches, specifically: - information and education regarding OA - addressing maintenance and pacing of activity - addressing a regular individualised exercise regimen - addressing weight loss if overweight or obese - reduction of adverse mechanical factors (eg, appropriate footwear) - consideration of walking aids and assistive technology.	Not reported	Ib (at least one RCT)	20 RCTs on the combination of patient education or self-management intervention plus exercise 2 hip studies: Juhakoski et al. 2011 (116), Fernandes et al. 2010 (107) 6 hip and knee studies: Van Baar et al. 1998 (117), Van Baar et al. 2001 (118), Walsh et al. 2006 (119), Hopman-Rock et al. 2000 (120), Hughes et al. 2004 (121), Hughes et al. 2006 (122) 4 RCTs on additional advice from a dietician for overweight or obese patients hip and knee studies: Tak et al. 2005 (115), Messier et al. 2004 (123), Miller 2006 (124), Rejeski et al. 2002 (125) 1 Meta-Analysis: Christensen et al. 2007 (126) 6 RCTs on knee OA: Miller et al. 2006 (124), Foy et al. 2011 (127), Bliddal et al. 2011 (128), Jenkinson et al. 2009 (129), Shea et al. 2010 (130), Riecke et al. 2010 (131)	Systematic review on effectiveness of combination of patient education or self-management intervention with/ without exercise in hip and knee OA. Systematic review on effectiveness of weight-loss programmes.	DELBI domain 3: 23/28 points DELBI domain 6: 4/8 points
NICE (2014) (11) **Update of (36)**	**Recommendation 6:** Offer advice on the following core treatments to all people with clinical osteoarthritis. - Access to appropriate information (see recommendation 7). - Activity and exercise (see recommendation 12). - Interventions to achieve weight loss if the person is overweight or obese (see recommendation 14 and Obesity [NICE clinical guideline 43]). [2008, amended 2014]	Not reported	Not reported	References see following Recommendation 7, 12, 14	This recommendation was published in the previous version of this guideline and was amended in 2014.	DELBI domain 3: 27/28 points DELBI domain 6: 6/8 points

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Recommendation 7: Offer accurate verbal and written information to all people with osteoarthritis to enhance understanding of the condition and its management, and to counter misconceptions, such as that it inevitably progresses and cannot be treated. Ensure that information sharing is an ongoing, integral part of the management plan rather than a single event at time of presentation. [2008]	Not reported	Not reported	2 Meta-Analysis: Chodosh et al. 2005 (132) Superio-Cabuslay et al.1996 (133) 6 RCTs: Buszewicz et al. 2006 (134) Calfas et al. 1992 (135) Heuts et al. 2005 (136) Maisiak et al. 1996 (137) Nunez et al. 2006 (138) Victor et al.2005 (139) 1 implementation Study De Jong et al. 2004 (140) 1 observational study Hampson et al. 1993 (141)	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Systematic review about effectiveness of patient information provision/ education methods/ patient self-management programmes with respect to symptoms, function, quality of life Evidence strength: significant body of evidence	
	Recommendation 12: Advise people with osteoarthritis to exercise as a core treatment (see recommendation 6), irrespective of age, comorbidity, pain severity or disability. Exercise should include: - local muscle strengthening and - general aerobic fitness. It has not been specified whether exercise should be provided by the NHS or whether the healthcare professional should provide advice and encouragement to the person to obtain and carry out the intervention themselves. Exercise has been found to be beneficial but the clinician needs to make a judgement in each case on how to effectively ensure participation. This will depend upon the person's individual needs, circumstances and self-motivation, and the availability of local facilities. [2008]	Not reported	Not reported	Review on exercise therapy vs.sham exercise or no treatment control groups: 1 meta-analysis (144) 20 RCTs (115, 118, 123, 125, 145-160) Review on exercise therapy vs. other osteoarthritis therapies: 9 RCTs (150, 154, 155, 158, 159, 161-164)	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Evidence strength: limited evidence	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Recommendation 14: Offer interventions to achieve weight loss as a core treatment (see recommendation 6) for people who are obese or overweight. [2008]	Not reported	Not reported	Only studies on knee OA 1 meta-analysis: Christensen et al. 2007 (126) 1 RCT: Rejeski et al. 2002 (125) NICE Clinical guideline [CG189] Obesity: identification, assessment and management (167)	This recommendation was published in the previous version of this guideline and was carried out with changes in the updated version 2014. Evidence strength: no clear evidence	
OARSI (2019) (16)	**Arthritis education** Arthritis education was, again, considered a standard of care.	Strong	Not reported		No systematic review	DELBI domain 3: 23/28 points DELBI domain 6: 5/8 points
	Structured land-based exercise programs (Type 1- strengthening and/or cardio and/or balance training/neuromuscular) For patients with Hip OA, only structured land-based exercise programs were considered eligible for Core Treatment designation.	Strong	moderate	8 RCTs Abbott, et al. 2013 (209) Fernandes, et al. 2010 (107) Foley, et al. 2003 (215) French, et al. 2013 (108) Krauß, et al. 2014 (216) Tak, et al. 2005 (115) Teirlinck, et al. 2016 (217) van Baar, et al. 1998 (218)	Systematic review about benefits and harms of Structured Exercise Programs	
	Conditional Good Clinical Practice Statement **Dietary Weight Management** weight management may be recommended for certain individuals (e.g., individuals presenting with body mass index ≥ 30 kg/m^2) of any comorbidity subgroup as a part of a healthy lifestyle regimen	Very low	Not applicable		No randomized controlled trial data that could provide supportive data. Expert opinion	
RACGP (2018) (12)	**Self-management education programs** We are unable to recommend either for or against formal face-to-face self-management education programs for people with knee and/or hip osteoarthritis (OA). **However, clinicians should provide information to enhance understanding about OA, its prognosis and its optimal management.**	Conditional (neutral)	Very low	Poulsen et al. 2013 (112)	The working group felt that ongoing education and advice provided by the clinician remains integral to person-centred care and shared decision-making. No systematic review	DELBI domain 3: 24/28 points DELBI domain 6: 7/8 points

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Land-based exercise We strongly recommend offering land-based exercise for all people with hip OA to improve pain and function, regardless of their age, structural disease severity, functional status or pain levels. Exercise has also been found to be beneficial for other comorbidities and overall health.	Strong (when combining all studies of land-based exercise)	Moderate (land-based)	1 meta-analysis: Fransen et al. 2014 (202)	Systematic review on benefits and harms of all land-based exercise in the management of patients with knee OA.	
	However, we are unable to specifically recommend either for or against different types of land-based exercise at this stage. Clinicians should prescribe an individualised progressive exercise program, taking into account the person's preference, capability and the availability of local facilities. Realistic goals should be set. Dosage should be progressed with full consideration given to the frequency, duration and intensity of exercise sessions, number of sessions, and the period over which sessions should occur. The clinician should monitor the person's response to the exercise program and could try a different form of land-based exercise if improvements are not evident. Attention should be paid to strategies to optimise adherence. Referral to an exercise professional to assist with exercise prescription and provide supervision either in person or remotely may be useful for some individuals.	Conditional (neutral) for one type of land-based exercise over another (eg walking, muscle strengthening, stationary cycling, Tai Chi, Hatha yoga)	Very low (walking, muscle strengthening, stationary cycling, Tai Chi, Hatha yoga)	Muscle strengthening (107, 116, 216) Walking (219-221) Cycling (222) Tai Chi (146, 148, 223-229) Yoga (230, 231)	Hip and knee studies (combining all studies for strong recommendation)	
	Weight management We strongly recommend weight management for people with knee and/or hip OA. For those who are overweight (body mass index [BMI] ≥ 25 kg/m^2) or obese (BMI ≥ 30 kg/m^2), a minimum weight loss target of 5–7.5% of body weight is recommended.	Strong (weight management)	Very low	Bliddal et al. 2011 (128) Messier et al. 2004 (123) Miller et al. 2006 (124)	Systematic review on benefits and harms of weight management of patients with knee OA.	

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
	Combination weight management plus exercise It is beneficial to achieve a greater amount of weight loss given that a relationship exists between the amount of weight loss and symptomatic benefits. **Weight loss should be combined with exercise for greater benefits.** For people of healthy body weight, education about the importance of maintaining healthy body weight is essential.	Conditional (combination weight management plus exercise)		Messier et al. 2004 (123) Messier et al. 2013 (203) Focht et al. 2005 (147)	Systematic review benefits and harms of combination weight management and exercise interventions compared to mono-therapy of patients with knee OA.	

Notes: BMI - Body Mass Index, DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, OA - Osteoarthritis, RCT - Randomised Controled Trial

A 18 - Evidenztabelle 3.3: Meta-Analysen zur Nachhaltigkeit konservativer Therapie (in alphabetischer Reihenfolge)

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Aweid (232)	MA	October 2016	20 prospective studies and retrospective comparative and case-control studies	TKR, THR, arthroscopy, opiods, non-steroidal anti-inflammatory drugs, paracetamol, chondroitin sulphate and glucosamine	Mortality, risk of serious complications	With regard to **mortality THR** had the **lowest risk** (Relative Risk of one study 0.7; 95% CI: 0.7-0.7). **Mortality risk** in patients with hip/knee OA was **significantly increased** by **celecoxib, diclofenac, ibuprofen, oxycodon** and **non-significantly decreased by tramadol**. **Highest risk for infections** was shown for **THA and TKA** compared to control group (odds ratio of one study: 15.0; 95% CI: 4.1-54.3). Diclofenac was the highest risk for gastro-intestinal risk (odds ratio of one study: 4.77; 95% 3.94-5.76), Celecoxib for cardiovascular risk (odds ratio of one study: 2.26; 95% CI: 1.0-5.1), and Ibuprofen for renal complications (odds ratio of one study 2.32; 95% CI: 1.45-3.71). There was no published evidence on serious cardiovascular complications following TKR and on renal complications following TJR.	A self-developed appraisal tool was used to assess the quality of studies.	Critically low	2+
Fransen (202)	MA	February 2013	10 RCTs	Land-based therapeutic exercise	Joint pain, physical function, quality of life	<u>For hip OA only</u> High-quality evidence from nine trials indicated that **exercise reduced pain** (SMD: -0.38, 95% CI: -0.55 to -0.20) and **improved physical function** (SMD: -0.38, 95% CI -0.54 to -0.05) **immediately after treatment.** Only three small studies evaluated **quality of life**, with overall low quality evidence, with **no benefit of exercise** demonstrated (SMD: -0.07, 95% CI: -0.23 to 0.36).	Cochrane Review Risk of Bias Tool of the Cochrane Collaboration. Seven of the ten included RCTs had a low risk of bias.	Moderate	1+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
						The **reduction in pain** was **sustained at least three to six months after ceasing monitored treatment** (five RCTs; (SMD: -0.38, 95% CI: -0.58 to -0.18). The **improvement in physical function** was **also sustained** (five RCTs, SMD: -0.37, 95% CI: -0.57 to -0.16).	None of the RCTs were able to blind participants to treatment allocation.		
Goh (233)	MA	December 2017	77 RCTs	Exercise	Pain, function, performance, and quality of life	<u>For hip and knee OA</u> **Statistically significant exercise benefits** for **pain relief** (pooled effect sizes of 69 RCTs: 0.56; 95% CI: 0.44–0.68), **function** (pooled effect size of 64 RCTs: 0.50; 95% CI: 0.38–0.63), **performance** (pooled effect estimates of 72 RCTs: 0.46; 95% CI: 0.35–0.57), and **quality of life** (pooled effect estimates of 34 RCTs: 0.21; 95% CI: 0.11–0.31) **at or nearest to 8 weeks were confirmed.** Across all outcomes, the **effects appeared to peak around 2 months** and **then gradually decreased** and became **no better than usual care after 9 months.** Better pain relief was reported by trials investigating participants who were younger (mean age <60 years), had knee OA, and were not awaiting joint replacement surgery.	A modified Cochrane risk of bias assessment tool was used to assess the quality of studies.	Low	1-

Notes: AMSTAR - A Measurement Tool for the Assessment of Multiple Systematic Reviews, MA - Meta-Analysis, OA - Osteoarthritis, SIGN - Scottish Intercollegiate Guidelines Network, SMD - Standardized Mean Difference, THR - Total Hip Replacement, TJR - Total Joint Replacement, TKR - Total Knee Replacement

A 19 - Leitliniensynopse 4.1: Empfehlungen (bzw. Rationalen) zu vorangegangene Infektion des Hüftgelenkes vor Hüft-TEP-Operation

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
2nd ICM **(2019) (17)**	**Elective joint arthroplasty is contraindicated in patients with an infectious lesion in the ipsilateral extremity, until the infection is resolved.** Total joint arthroplasty needs to be deferred in patients with uncontrolled conditions, such as diabetes, malnutrition, chronic kidney disease, as well as other diseases that are known to increase the risks of SSIs/PJIs. **Rationale - Previous Infection of the Operative Joint (Non-modifiable Risk factor):** Patients reporting previous infections of the joint should be worked up for active infections with erythrocyte sedimentation rate and C-reactive protein. Surgery is to be delayed for those with markers of active infections.	Not reported.	2+	Pugely et al. 2015 (234) Bongartz et al. 2008 (235)	Evidence strength: strong	DELBI domain 3: 21/28 points DELBI domain 6: 4/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, SSI - Surgical Site Infection, PJI - Periprosthetic Joint Infection, TJA - Total Joint Arthroplasty

A 20 - Leitliniensynopse 4.2: Empfehlungen (bzw. Rationalen) zu aktiver Infektion vor Hüft-TEP-Operation

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
2nd ICM (2019) (17)	**Elective joint arthroplasty is contraindicated in patients with an infectious lesion in the ipsilateral extremity, until the infection is resolved.** Total joint arthroplasty needs to be deferred in patients with uncontrolled conditions, such as diabetes, malnutrition, chronic kidney disease, as well as other diseases that are known to increase the risks of SSIs/PJIs. **Rationale - Active Infection (Modifiable Risk factor):** To prevent the catastrophic sequelae of PJIs, active infections of the joint, bloodstream, or local tissue are an absolute contraindication to surgery and should be managed before performing a TJA.	Not reported.	2-	Bozic et al. 2012 (236) Bozic et al. 2012 (237) Cruess et al. 1975 (238) Del Sel et al. 1979 (239) Fitzgerald Jr et al. 1977 (240) Hanssen et al. 1998 (241) Schmalzried et al. 1992 (242) Stinchfield et al. 1980 (243) Thomas et al. 1983 (244) Cherney et al. 1983 (245) Jupiter et al. 1981 (246) Everhart et al. 2016 (247) Radtke et al. 2016 (248) Grammatico-Guillon et al. 2015 (249) Cordero-Ampuero et al. 2013 (250) Mayne et al. 2018 (251) Lai et al. 2007 (252)	Evidence strength: strong	DELBI domain 3: 21/28 points DELBI domain 6: 4/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, SSI - Surgical Site Infection, PJI - Periprosthetic Joint Infection, TJA - Total Joint Arthroplasty

A 21 - Leitliniensynopse 4.4: Empfehlungen (bzw. Rationalen) zu Adipositas (BMI ≥ 40kg/m^2) bei der Indikation zur Hüft-TEP (in alphabetischer Reihenfolge)

Guideline	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
AAOS (2017) (13)	a) Moderate strength evidence supports that obese patients with symptomatic osteoarthritis of the hip, when compared to non-obese patients, may achieve lower absolute outcome scores but a similar level of patient satisfaction and relative improvement in pain and function after total hip arthroplasty.	Not reported	Not reported	Bennett et al. 2010 (253) McCalden et al. 2011 (254)	Two low quality studies Strength of recommendation: Moderate Evidence	DELBI domain 3: 26/28 points DELBI domain 6: 6/8 points
	b) Limited strength evidence supports that obese patients with symptomatic osteoarthritis of the hip, when compared to non-obese patients, have increased incidence of postoperative dislocation, superficial wound infection, and blood loss after total hip arthroplasty.			Bowditch et al. 1999 (255)	One low quality study Strength of recommendation: Limited	
2nd ICM (2019) (17)	Elective joint arthroplasty is contraindicated in patients with an infectious lesion in the ipsilateral extremity, until the infection is resolved. Total joint arthroplasty needs to be deferred in patients with uncontrolled conditions, such as diabetes, malnutrition, chronic kidney disease, as well as other diseases that are known to increase the risks of SSIs/PJIs. **Rationale - Obesity (Modifiable Risk factor):** Current management guidelines indicate weight loss is helpful in reducing PJIs in this patient population. Hence, obesity is considered a relative contraindication while morbid obesity serves as an absolute contraindication.	Not reported	2-	Werner et al. 2017 (256) Fu et al. 2017 (257) Laurberg et al. 2012 (258) Tan et al. 2016 (259) Kunutsor et al. 2016 (260) Yuan et al. 2013 (261) Kerkhoffs et al. 2012 (262)	Evidence strength: strong	DELBI domain 3: 21/28 points DELBI domain 6: 4/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, SSI - Surgical Site Infection, PJI - Periprosthetic Joint Infection

A 22 - Evidenztabelle 4.4: Meta-Analysen zu Adipositas (BMI ≥ 40kg/m^2) als Risikofaktor für das postoperative Outcome nach Hüft-TEP (in alphabetischer Reihenfolge)

Study	Type of study	Search period	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Barrett (263)	MA	March 2018	89 observational studies	Total joint replacement	Venous thromboembolism (VTE)	**The pooled Relative Risk for VTE** in three studies comparing **BMI ≥50 vs. <50 kg/m²** was **1.72** (95% CI: 1.10-2.26). Comparing **BMIs ≥40 vs. <40 and ≥35 vs. <35 kg/m²**, there were **no significant associations with VTE risk**. One study comparing **underweight vs. morbidly obese patients** (BMI <18.5 vs. 40-49 kg/m^2) reported a **Relative Risk of 3.10** (95% CI: 1.12-8.57) **for VTE.**	NOS was used to assess methodological quality of studies included No explicit differentiation of the results between hip and knee arthroplasty	Low	2+
Kunutsor (260)	MA	September 2015	66 longitudinal studies (23 prospective cohort and 43 retrospective cohort or case-control)	Total Joint Arthroplasty	PJI, superficial wound infection	<u>Comparing BMI ≥40 versus <40 kg/m^2</u> Pooled relative risk of five studies (3.68 (95% CI: 2.25–6.01) found an **increased risk for PJIs.** A **significant increased risk** was found for **superficial wound infection** (pooled relative risk of three studies 2.81; 95% CI: 1.44-5.50)	NOS was used to assess methodological quality of studies included Only longitudinal studies with at least one-year follow-up were included	Moderate	2++
Liu (264)	MA	July 2014	15 prospective cohort studies	THA	Complication rate (overall dislocation, deep infection and osteolysis), operative time and length of stay in hospital of the primary THA, function score	Super-obese patients had a **non-significantly higher risk** for **overall complications** (pooled relative risk of two studies 2.19; 95% CI: 0.71-6.72) and **dislocations** (pooled relative risk of two studies 3.27; 95 CI: 0.67-	Only prospective cohort studies were included. Definition non-obese group BMI < 30 kg/m^2; the cutoff point of obesity should be BMI > 30 kg/m^2	Critically low	2+

Study	Type of study	Search period	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
						15.91) than non-obese patients. A **relative lower Harris Hip Score** was observed in the **subgroup of super-obesity** (pooled mean difference of two studies: -6.74; 95% CI: −10.66 to −2.82) compared to non-obese group.	Definition super-obese BMI >40 kg/m^2 NOS was used to assess methodological quality of studies included.		
Ma (265)	MA	May 2014	15 prospective and retrospective studies	THA	Risk of PJI	The pooled results of two prospective and two retrospective studies (pooled relative risk 8.48; 95% CI: 3.47-20.71) showed that the **risk of PJIs was significantly higher in the BMI≥40 group than that in the BMI<30 group.**	NOS was used to assess methodological quality of studies included.	Critically low	2+
Ponnusamy (266)	MA	August 2016	33	THA	Functional scores, reoperations, and aseptic and septic revisions	**The morbidly obese and super-obese groups were at an increased risk for revision, especially for septic revisions, compared with the non-obese group.** The severely obese group had risk ratios of 1.40 (95% CI: 0.97-2.02) for revision (five studies), 0.70 (95% CI: 0.45-1.10) for aseptic revision (one study), and 3.17 (95% CI: 2.25-4.47) for septic revision (five studies). Morbidly obese patients had risk ratios of 2.01 (95% CI: 1.81-2.23) for revision (eight studies), 1.40 (95% CI: 0.84 to 2.32) for aseptic revision (six	Quality assessment of the studies was performed with Risk of Bias in Non-Randomized studies of interventions (ROBINS-I) Definitions Obese: BMI > 35 kg/m^2; Morbidly obese: BMI > 40 kg/m^2; Super-obese: BMI > 50 kg/m^2; non-obese: BMI < 25 kg/m^2	Critically low	2+

Study	Type of study	Search period	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
						studies), and 9.75 (95% CI: 3.58-26.59) for septic revision (12 studies). Super-obese patients had risk ratios of 2.62 (95% CI: 1.68-4.07) for revision (five studies), 1.98 (95% CI: 0.80-4.94) for aseptic revision (four studies), and 7.22 (95% CI: 1.51-34.60) for septic revision (four studies). There was **no significant difference** in the standardized mean difference **of functional outcome scores between the severely obese cohort, the morbidly obese cohort, and the super-obese** cohort.			

Notes: AMSTAR - A Measurement Tool for the Assessment of Multiple Systematic Reviews, CI - Confidence Interval, MA - Meta-Analysis, NOS - Newcastle Ottawa Scale, PJI - Periprosthetic Joint Infection, SIGN - Scottish Intercollegiate Guidelines Network, SMD - Standardized Mean Difference, SSI - Surgical Site Infection, THA - Total Hip Arthroplasty, TKA - Total Knee Arthroplasty, VTE - Venous Thromboembolism, WMD - Weighted Mean Difference

A 23 - Leitliniensynopse 5.1: Empfehlungen (bzw. Rationalen) zu modifizierbaren Risikofaktoren bei der Indikation zur Hüft-TEP (in alphabetischer Reihenfolge)

Guideline	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
2nd ICM (2019) (17)	Elective joint arthroplasty is contraindicated in patients with an infectious lesion in the ipsilateral extremity, until the infection is resolved. Total joint arthroplasty needs to be deferred in patients with uncontrolled conditions, such as diabetes, malnutrition, chronic kidney disease, as well as other diseases that are known to increase the risks of SSIs/PJIs.	Not reported	2+	see following Chapters	Evidence strength: strong Consensus: strong Different systematic reviews	DELBI domain 3: 21/28 points DELBI domain 6: 4/8 points
NICE (2014) (11) **Update of (36)**	**Recommendation 39:** Patient-specific factors (including age, sex, smoking, obesity and comorbidities) should not be barriers to referral for joint surgery. [2008, amended 2014]	Not reported	2+	<u>Only Hip-Studies:</u> Johnsen et al. 2006 (267) Röder et al. 2007 (97) Nilsdotter et al. 2001 (96) Azodi et al. 2006 (268) Jain et al. 2003 (269) Meding et al. 2000 (270) Schmalzried et al. 2005 (271) Caracciolo et al. 2005 (95) Jones et al. 2001 (272)	Evidence strength: very little evidence This recommendation was published in the previous version of this guideline and was amended in 2014.	DELBI domain 3: 27/28 points DELBI domain 6: 6/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, SSI - Surgical Site Infection, PJI - Periprosthetic Joint Infection

A 24 - Tabelle 5.1.1: Empfehlungen (bzw. Rationalen) zu Nikotinabusus/ Nikotinkarenz bei der Indikation zur Hüft-TEP (in alphabetischer Reihenfolge)

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
AAOS (2017) (13)	Limited strength evidence supports that patients who use tobacco products are at an increased risk for complications after total hip arthroplasty.	Not reported	Not reported	2 retrospective cohort studies Huddleston et al. 2012 (273) Azodi et al. 2006 (268)	Low-quality studies Low strength evidence of conflicting evidence	DELBI domain 3: 26/28 points DELBI domain 6: 6/8 points
NICE (2014) (11) Update of (36)	**Recommendation 39:** Patient-specific factors (including age, sex, smoking, obesity and comorbidities) should not be barriers to referral for joint surgery. [2008, amended 2014]	Not reported	Not reported	1 retrospective cohort study Azodi et al. 2006 (268)	This recommendation was published in the previous version of this guideline and was amended in 2014. Evidence strength: very little evidence	DELBI domain 3: 27/28 points DELBI domain 6: 6/8 points
2nd ICM (2019) (17)	**Recommendation:** Total joint arthroplasty needs to be deferred in patients with uncontrolled conditions, such as diabetes, malnutrition, chronic kidney disease, as well as other diseases that are known to increase the risks of SSIs/PJIs. **Rationale – Smoking (Modifiable Risk factor):** Smoking represents an independent modifiable risk factor that significantly compounds the risks of SSIs/PJIs when present alongside other comorbidities. Therefore, active smoking, especially heavy tobacco use, represents a relative contraindication to TJA until enrolled in a smoking cessation program for at least 4 weeks.	Not reported	Not reported	Springer et al. 2016 (274) Crowe et al. 2015 (275) Maoz et al. 2015 (276) Kapadia et al. 2014 (277) Duchman et al. 2015 (278) Kremers et al. 2015 (279) Singh et al. 2015 (280) Sahota et al. 2018 (281) Gonzalez et al. 2018 (282) Mills et al. 2011 (283) Azodi et al. 2006 (268)	Evidence strength: strong	DELBI domain 3: 21/28 points DELBI domain 6: 4/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, SSI - Surgical Site Infection, PJI - Periprosthetic Joint Infection, TJA - Total Joint Arthroplasty

A 25 - Evidenztabelle 5.1.1: Systematische Reviews und Meta-Analysen zu Rauchen als Risikofaktor für das postoperative Outcome nach Hüft-TEP (in alphabetischer Reihenfolge)

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Barrett (263)	MA	March 2018	89 observational studies	Total joint replacement	Venous thromboembolism (VTE)	**Comparing smokers with non-smokers**, there was a **decreased risk of VTE** (pooled Relative Risks of five studies 0.56 (95% CI: 0.42-0.75)	Newcastle Ottawa Scale (NOS) was used to assess methodological quality of studies included No explicit differentiation of the results between hip and knee arthroplasty	Low	2+
Bedard (284)	MA	January 2018	14 retrospective studies (cohort and case-control)	Primary total hip or knee arthroplasty	Wound complication and periprosthetic joint infection (PJI)	**Tobacco use** before total arthroplasty **significantly increases** the **risk of wound complications** (pooled Odds Ratio of 14 studies 1.78; 95% CI: 1.32-2.39) **and PJI** (pooled Odds Ratio of 13 studies 2.02; 95% CI 1.47-2.77) **compared to non-tobacco users.** **Current tobacco users** had a **significantly increased risk of PJI compared to former tobacco users** (pooled Odds Ratio of three studies 1.52; 95% CI: 1.07-2.14)	NOS was used to assess methodological quality of studies included Findings based upon lower-quality retrospective studies. No explicit differentiation of the results between hip and knee arthroplasty	Critically low	2+
Cherian (285)	MA	September 2013	21 observational studies	Total hip and knee arthroplasty	Aseptic implant loosening	<u>Results explicitly based on total hip arthroplasty:</u> **Tobacco use** (current and former) was **not associated with aseptic loosening** of the prosthesis (pooled Odds Ratio of three studies 1.96; 95% CI: 0.43-8.97).	Methodological Index for Non-randomized studies was used to assess methodological quality of studies included. Only studies with more than 1-year follow-up, more than 20 patients, and with three or more reports on specific host factors	Critically low	2+
Elsiwy (286)	SR	2008 to May 2018	15 (prospective and retrospective)	Total hip and knee replacement	Cardiac complication	**Significant association** between **smoking history** and **cardiac complication** (Odds Ratio of one study 2.56; 95% CI: 1.34-4.91)	Critical appraisal of studies included by a self-developed checklist based on the Newcastle–Ottawa Scale and the	Low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
							Evidence-Based Library Appraisal Checklist		
Kunutsor (260)	MA	September 2015	66 longitudinal studies (23 prospective cohort and 43 retrospective cohort or case-control)	Total Joint Arthroplasty	Any patient factor such as sociodemographic characteristics, BMI, medical and surgical histories with periprosthetic joint infections (PJI)	**Smokers** had an **increased risk of PJI** compared to non-smokers (pooled relative risk of eight studies 1.83 (95% CI: 1.24-2.70).	NOS was used to assess methodological quality of studies included Only longitudinal studies with at least one-year follow-up were included No explicit differentiation of the results between hip and knee arthroplasty	Moderate	2++
Singh (287)	MA	March 2010	13 Studies (cohort and case-control)	Total hip or knee arthroplasty	Post-operative outcomes	<u>Results explicitly based on total hip arthroplasty:</u> **Current smokers** were **significantly more** likely to have any **postoperative complication** (pooled risk ratio of two studies 1.24; 95% CI: 1.01-1.54) and **death** (risk ratio of one study 1.63; 95% CI: 1.06-2.51), compared to non-smokers. **Former smokers** were significantly more likely to have any **post-operative complication** (risk ratio of one study 1.32; 95% CI: 1.05-**1.66)** and **death** (risk ratio of one study 1.69; 95% CI: 1.08-2.64]). No significant effects for smokers and prior smokers were found for reoperation or revision, implant loosening, and deep infections.	NOS was used to assess methodological quality of studies included	Low	2+
Teng (288)	MA	August 2014	6 cohort studies (prospective and retrospective)	**Total Hip Arthroplasty**	Risk of any prosthesis-related complication	**Smokers** had a **significantly increased risk of aseptic loosening of prosthesis** (pooled risk ratio of	NOS was used to assess methodological quality of studies included	Critically low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
						three studies 3.05; 95% confidence interval: 1.42-6.58), **deep infection** (pooled risk ratio of four studies 3.71; CI: 1.86-7.41), and **all-cause revisions** (pooled risk ratio of four studies 2.58; 95% CI: 1.27-5.22) compared to non-smokers. **No significant difference** in the **risk of implant dislocation** (pooled risk ratio of three studies 1.27; 95% CI: 0.77-2.10) and **length of hospital stay** (weighted mean difference of three studies 0.03; 95% confidence interval: -0.65-0.72) was found between smokers and nonsmokers.			

Notes: AMSTAR - A Measurement Tool for the Assessment of Multiple Systematic Reviews, CI - Confidence Interval, MA - Meta-Analysis, NOS - Newcastle Ottawa Scale, PJI - Periprosthetic Joint Infection, SIGN - Scottish Intercollegiate Guidelines Network, SR - Systematic Review, VTE - Venous Thromboembolism

A 26 - Tabelle 5.1.2: Empfehlungen (bzw. Rationalen) zu Diabetes mellitus/ erhöhten Glukose- bzw. HbA1c-Spiegel bei der Indikation zur Hüft-TEP

Guideline	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
2nd ICM (2019) (17)	**Elective joint arthroplasty is contraindicated in patients with an infectious lesion in the ipsilateral extremity**, until the infection is resolved. **Total joint arthroplasty needs to be deferred in patients with uncontrolled conditions, such as diabetes,** malnutrition, chronic kidney disease, as well as other diseases that are known to increase the risks of SSIs/PJIs. **Rationale - section Diabetes mellitus:** Patients with a sole diagnosis of **well-controlled diabetes** do **not confer clinically significant risk for PJIs**. However, for patients with **uncontrolled diabetes**, end-organ damage or other clinically relevant comorbid conditions, **further evaluation and optimization are necessary**. Elevated **perioperative glucose and HbA1c** are equivocal in predicting PJIs but **should still be optimized in the perioperative period.** **Severely uncontrolled diabetes is an absolute contraindication for TJA** (e.g., serum glucose 200 mg/dL). For those with HbA1c 8% to 9% or glucose levels between 180 to 200 mg/dL, optimization may be a consideration in the preoperative period.	Not reported	Not reported	Kunutsor et al. 2016 (260) Namba et al. 2013 (289) Lee et al. 2015 (290) Kong et al. 2017 (291) Wu et al. 2014 (292) Chen et al. 2013 (293) Yang et al. 2014 (294) Zhu et al. 2015 (295) Kremers et al. 2015 (296) Martínez-Huedo et al. 2017 (297) Shohat et al. 2018 (298) Shohat et al. 2017 (299) Chrastil et al. 2015 (300) Jämsen et al. 2010 (301) Cancienne et al. 2017 (302) Jämsen et al. 2012 (303)	Strong consensus (90% agreed) Evidence strength: strong	DELBI domain 3: 21/28 points DELBI domain 6: 4/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, SSI - Surgical Site Infection, PJI - Periprosthetic Joint Infection

A 27 - Evidenztabelle 5.1.2: Systematische Reviews und Meta-Analysen zu Diabetes mellitus als Risikofaktor für das postoperative Outcome nach Hüft-TEP (in alphabetischer Reihenfolge)

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Elsiwy (286)	SR	2008 to May 2018	15 (prospective and retrospective)	Total hip arthroplasty (THA) and total knee arthroplasty (TKA)	Cardiac complication occurring within 90 days	THA only: One study found a **non-significant association** between **diabetes** and **cardiac complications**. TKA only: Four studies were included in this review with **conflicting results** concerning diabetes and post-operative cardiac complications.	Critical appraisal of studies included by a self-developed checklist based on the NOS and the Evidence-Based Library Appraisal Checklist	Low	2+
Kong (291)	MA	December 2015	24 (observational studies)	THA and TKA	PJI	For THA only: **Diabetes mellitus** was **associated** with **PJI** (pooled odds ratio of 5 studies 1.51; 95% CI: 1.33-1.71). Significant heterogeneity was observed among these studies.	NOS was used to assess methodological quality of studies included. All studies were of high quality.	Critically low	2+
Kunutsor (260)	MA	September 2015	66 longitudinal studies (23 prospective cohort and 43 retrospective cohort or case-control)	Total Joint Arthroplasty	Any patient factor such as sociodemographic characteristics, BMI, medical and surgical histories with PJI	**Diabetes** was associated with **increased risk of PJI** (pooled relative risk of 29 studies 1.74; 95% CI: 1.45-2.09) with evidence of substantial between-study heterogeneity. The **risk** in patients with diabetes compared with those with no diabetes is **increased** for **superficial wound infection** (pooled relative risk of three studies 2.57; 95% CI: 1.07-6.17).	NOS was used to assess methodological quality of studies included Only longitudinal studies with at least one-year follow-up were included.	Moderate	2++
Podmore (304)	MA	May 2017	70 (observational studies)	THA and TKA	Surgical complications, surgical site infections (SSI), venous thromboembolism (VTE), readmission to	41 studies studied diabetes as comorbid condition. Risk of **surgical complications** (pooled odds ratios of seven studies 1.12; 95% CI: 1.01-1.25),	NOS was used to assess methodological quality of studies included.	Low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
					hospital within 90 days, short-term mortality within 90 days after surgery, function, health-related quality of life, pain, revisions, long-term mortality	**SSI** (pooled odds ratios of 12 studies 1.90; 95% CI: 1.32-2.74), **readmission to hospital** (pooled odds ratio of nine studies 1.15; 95% CI: 1.11-1.19), **short-term mortality** (pooled odds ratios of four studies 1.26; 95% 1.15-1.38), and **revisions** (pooled odds ratios of four studies 1.28; 95% CI: 1.02-1.59) was **significantly higher** in **patients with diabetes**. **No difference** was found between diabetic and non-diabetics for **VTE** (pooled odds ratio of 12 studies 1.26; 95% CI: 0.92-1.72), **function** (pooled odds ratios of five studies 1.14; 95% CI: 0.96-1.35), **quality of life** (pooled odds ratio of three studies 1.01; 95% CI: 0.61-1.68), **pain** (pooled odds ratio of six studies 1.01; 95% CI: 0.66-1.54), and **long-term mortality** (pooled odds ratio of three studies 0.97; 95% CI: 0.82-1.13)	Studies with fewer than 100 participants were excluded.		
Shohat (298)	MA	June 2017	17 (prospective and retrospective observational studies)	Primary or revision THA or TKA	SSI, mainly periprosthetic joint infection (PJI)	**Elevated HbA1C levels** were **associated** with a **higher risk of SSI/PJI** after total joint arthroplasty (pooled odds ratios of 10 studies 1.49; 95% CI: 0.94-2.37) with significant heterogeneity between studies. Results of a **subgroup analysis** of studies using an **HbA1C cut-off of 7% did not demonstrate** a **statistically significant association between HbA1C level greater than**	Only studies with a minimum of 30 days of follow-up after implementation were included. Newcastle Ottawa Scale (NOS) was used to assess methodological quality of studies included.	Critically low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
						7% and SSI/PJI (pooled odds ratios of six studies 0.87; 95% CI: 0.57-1.32). Heterogeneity among these studies had a tendency toward statistical significance.			
Tsang (305)	MA	September 2011	10 (observational studies)	THA	Peri-operative complication	**Diabetes mellitus** was **associated** with an **increased risk** of **established SSI** (pooled odds ratios of three studies 2.04; 95% CI: 1.52 to 2.76 with high level of statistical heterogeneity). The **risks of lower respiratory tract infections** (odds ratio 1.95; 95% CI: 1.61-2.26) and **urinary tract infections** (odds ratio 1.43; 95% CI: 1.33-1.55) were **significantly greater in diabetes mellitus**. Furthermore, a **reduced risk** of **peri-operative acute coronary** syndrome events (odds ratio 0.33; 95% CI: 0.15-0.75) was found. **No difference** was demonstrated in the risk of developing **VTE, acute SSI and all-cause revision arthroplasty** between diabetic and non-diabetics (evidence based solely on single studies).	NOS was used to assess methodological quality of studies included.	Critically low	2+
Yang (306)	MA	March 2017	6 studies (retrospective studies)	THA and TKA	PJI	**Perioperative hyperglycemia and high HbA1C** are **associated** with a **higher risk of PJI** (differences between groups in terms of perioperative random blood glucose level weighted mean difference (WMD) 2.365; 95% CI: 1.802-2.929; perioperative HbA1C level	Methodological Index for Non-Randomized Studies (MINORS) Scale was used to assess methodological quality of studies included.	Critically low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
						WMD 3.266; 95% CI: 2.858-3.674).	Only high-quality studies were selected. Evidence quality for most outcomes was low.		
Zeng (307)	MA	March 2013	6	Joint Arthroplasty	VTE	**Patients with diabetes mellitus** had **no significantly higher VTE risk** than those with no disease (pooled odds ratio of two studies 0.78; 95% CI: 0.75-0.82 and pooled relative risk of two studies 1.11; 95% 0.81-1.50).	NOS was used to assess methodological quality of studies included Only studies published after 2000 were included.	Critically low	2+

Notes: AMSTAR - A Measurement Tool for the Assessment of Multiple Systematic Reviews, CI - Confidence Interval, NOS - Newcastle Ottawa Scale, MA - Meta-Analysis, PJI - Periprosthetic Joint Infection, SIGN - Scottish Intercollegiate Guidelines Network, SR - Systematic Review, THA - Total Hip Arthroplasty, TKA - Total Knee Arthroplasty, VTE - Venous Thromboembolism, WMD - Weighted Mean Difference

A 28 - Leitliniensynopse 5.1.3: Empfehlungen (bzw. Rationalen) zu Adipositas (BMI ≥ 30kg/m^2) bei der Indikation zur Hüft-TEP (in alphabetischer Reihenfolge)

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
AAOS (2017) (13)	Obesity as a risk factor a) Moderate strength evidence supports that obese patients with symptomatic osteoarthritis of the hip, when compared to non-obese patients, may achieve lower absolute outcome scores but a similar level of patient satisfaction and relative improvement in pain and function after total hip arthroplasty.	Not reported	Moderate	<u>6 moderate quality studies</u> Yeung et al. 2011 (308) Stevens et al. 2012 (309) Davis et al. 2006 (310) Judge et al. 2013 (311) Judge et al. 2011 (312) Gandhi et al. 2010 (313)	14 studies (8 low quality studies, 6 moderate quality studies)	DELBI domain 3: 26/28 points DELBI domain 6: 6/8 points
	Obesity as a risk factor b) Limited strength evidence supports that obese patients with symptomatic osteoarthritis of the hip, when compared to non-obese patients, have increased incidence of postoperative dislocation, superficial wound infection, and blood loss after total hip arthroplasty.	limited	limited	<u>8 low quality studies</u> Jackson et al. 2009 (314) McCalden et al. 2011 (254) Bennett et al. 2010 (253) Villalobos et al. 2013 (315) Bowditch et al. 1999 (255) Jones et al. 2012 (316) Ibrahim et al. 2005 (317) Azodi et al. 2006 (268)		
2nd ICM (2019) (17)	Elective joint arthroplasty is contraindicated in patients with an infectious lesion in the ipsilateral extremity, until the infection is resolved. Total joint arthroplasty needs to be deferred in patients with uncontrolled conditions, such as diabetes, malnutrition, chronic kidney disease, as well as other diseases that are known to increase the risks of SSIs/PJIs. **Rationale – Obesity (relative modifiable risk factor):** Current management guidelines indicate weight loss is helpful in reducing PJIs in this patient population. Hence, obesity is considered a relative contraindication while morbid obesity serves as an absolute contraindication.	Not reported	2+	Werner et al. 2017 (256) Fu et al. 2017 (257) Laurberg et al. 2012 (258) Tan et al. 2016 (259) Kunutsor et al. 2016 (260) Yuan et al. 2013 (261) Kerkhoffs et al. 2012 (262)	Evidence strength: strong	DELBI domain 3: 21/28 points DELBI domain 6: 4/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung

A 29 - Evidenztabelle 5.1.3: Systematische Reviews und Meta-Analysen zu Adipositas (BMI ≥ 30kg/m^2) als Risikofaktor für das postoperative Outcome nach Hüft-TEP (in alphabetischer Reihenfolge)

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Barrett (263)	MA	March 2018	89 observational studies	Total joint replacement	Venous thromboembolism (VTE)	**Risk of VTE for patients with BMI ≥ 25** vs. <25 kg/m^2 **was increased** (pooled Relative Risk of seven studies 1.40; 95% CI: 1.24-1.57). The pooled variably adjusted results for VTE for individuals with a BMI ≥30 vs. <30 kg/m^2 was high (pooled Relative Risk of 16 studies 1.65; 95% CI: 1.23-2.22). There was evidence of substantial between-study heterogeneity in the contributing studies. **The pooled Relative Risk for VTE** in three studies comparing **BMI ≥50 vs. <50 kg/m^2** was **1.72** (95% CI: 1.10-2.26). Comparing **BMIs ≥40 vs. <40 and ≥35 vs. <35 kg/m^2**, there were **no significant associations with VTE risk**. One study comparing **underweight vs. morbidly obese patients** (BMI <18.5 vs. 40-49 kg/m^2) reported a **Relative Risk of 3.10** (95% CI: 1.12-8.57) **for VTE.** **Previous bariatric surgery** (compared with BMI >40 or <25) were each **associated with an increased risk of VTE** (pooled Relative Risk of two studies 1.38; 95% CI: 1.29-1.46 and 2.28; 95% CI: 1.64-3.17)	NOS was used to assess methodological quality of studies included No explicit differentiation of the results between hip and knee arthroplasty	Low	2+
Buirs (98)	SR	June 2015	33 observational studies	THA	Functional Outcome	18 studies evaluated BMI as a potential predictor of functional outcomes after THA. More than 60% of the studies **(13 of 18 studies**) report a **significant negative association between BMI** and **short-term and long-term functional outcomes** after THA.	Level of evidence of all studies included was determined by using the GRADE rating scheme.	Low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Cherian (285)	MA	September 2013	21 observational studies	THA and TKA	Aseptic implant loosening	THA studies only Patients who had a B**MI of 30 kg/m² or greater** showed **no difference** with the numbers available in t**he risk of aseptic loosening compared** with patients with a BMI **less than 30 kg/m²** (pooled odds ratio of seven studies: 1.01; 95% CI: 0.73-1.40).	The Methodological Index for Non-Randomized Studies (MONORS) criteria was used to assess quality of studies included.	Critically low	2+
Elsiwy (286)	SR	2008 to May 2018	15 (prospective and retrospective)	THA and TKA	Cardiac complication occurring within 90 days	**One of eight studies found a significant relationship between obesity and cardiac complication associated with THA and TKA.**	Critical appraisal of studies included by a self-developed checklist based on the NOS and the Evidence-Based Library Appraisal Checklist	Low	2+
Haverkamp (318)	MA	1970-2010	15	THA	Short-and long-term outcomes	In **obese patients**, **dislocation of the hip** (pooled odds ratio of 10 studies: 0.54; 95% CI: 0.38–0.75), **aseptic loosening** (pooled odds ratio of six studies: 0.64; CI: 0.43–0.96), **infection** (pooled odds ratio of 10 studies: 0.3; CI: 0.19–0.49), and **venous thromboembolism** (pooled odds ratio of seven studies: 0.56; CI: 0.32–0.98) **occurred more often**. Concerning **septic loosening** (pooled odds ratio of six studies: 0.59; 95% CI: 0.26-1.33) **no statistically significant differences** were found. Based on the **Harris Hip Score** and a **follow-up period of two years or more**, a statistically **significant mean difference** of five pooled studies was found (4.54; 95% CI: 3.14-5.93).	BMI of greater than 30 was defined as obese. A list of criteria recommended by the Cochrane Collaboration Back Review Group was used to assess quality of studies included.	Critically low	2+
Hofstede (78)	SR	August 2014	35 prospective studies	THA	Clinical and functional outcomes	**Five studies** reported an association between BMI and postoperative outcomes and found a **higher dislocation rate**, **more superficial infections**, **poorer Harris Hip Score**, **lower SF-36**, **improvement on the Oxford Hip Scores**).	Self-developed appraisal tool	Low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
						Eight studies did **not find an association** with BMI and different outcomes.			
Kong (291)	MA	December 2015	24 observational studies	TJA surgery	Risk for PJI	THA studies only The **risk of PJI in obese patients is 2.0-fold higher than non-obese patients** (pooled odds ratio of four studies 2.04; 95% CI: 1.71-2.44).	NOS was used to assess methodological quality of studies included	Critically low	2+
Kunutsor (260)	MA	September 2015	66 longitudinal studies (23 prospective cohort and 43 retrospective cohort or case-control)	Total Joint Arthroplasty	Any patient factor such as sociodemographic characteristics, BMI, medical and Surgical histories with PJI	Comparing BMI ≥30 versus <30 kg/m^2 (20 studies) ; ≥35 versus <35 kg/m^2 (two studies); and ≥40 versus <40 kg/m^2 (five studies); the pooled RRs were 1.60 (1.29–1.99); 1.53 (1.22–1.92); and 3.68 (2.25–6.01) respectively	NOS was used to assess methodological quality of studies included Only longitudinal studies with at least one-year follow-up were included	Moderate	2++
Liu (264)	MA	July 2014	15 prospective cohort studies	THA	Complication rate (overall dislocation, deep infection and osteolysis), operative time and length of stay in hospital of the primary THA, function score	**Obese patients** had a **significant higher complication rate** (pooled relative risk of ten studies 1.68; 95% CI: 1.23-2.30), **dislocation rate** (pooled relative risk of six studies 2.08; 95% CI: 1.54-2.81), **more blood loss** (pooled relative risk of three studies 207.43; 95% CI: 408.05), and **longer duration of operative time** (pooled relative risk seven studies 10.67; 95% CI: 3.00-18.35) than non-obese patients. **Obese patients** had a **non-significantly higher risk** for **deep infection** (pooled relative risk of four studies 2.92; 95% CI: 0.74-11.49) than non-obese patients. **Obese patients** had a **significantly lower Harris Hip Score** (pooled relative risk of six studies -2.72; 95% CI: -4.77 to -0.67) than non-obese patients.	Only prospective cohort studies were included. Definition obese group BMI > 30 kg/m^2 and a non-obese group BMI < 30 kg/m^2; the cutoff point of obesity should be BMI > 30 kg/m^2 Definition super-obese BMI >40 kg/m^2 NOS was used to assess methodological quality of studies included.	Critically low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Lungu (79)	SR	April 2015	22	THA	Patient-reported pain and disability 3month to 2 yrs.	A **greater BMI** (>25 kg/m^2) at the time of surgery was associated with **worse THA results in terms of pain and function** with high quality of evidence (6 out of 10 studies).	Study quality was assessed with the modified version of the Methodology checklist for prognostic studies. Study heterogeneity limited the pooled assessment of the strength of associations between the preoperative variables and THA outcomes.	Critically low	2+
Ma (265)	MA	May 2014	15 prospective and retrospective studies	THA	Risk of PJI	The pooled result of 14 studies (RR=2.26; 95 % CI: 1.60–3.20) and retrospective studies (RR=2.31; 95 % CI: 1.41–3.80) showed that **risk of PJIs in the BMI≥30 group was significantly higher than that in the BMI<30 group.** The pooled results of four prospective (RR=9.86; 95 % CI: 2.76–35.18) and retrospective studies (RR=7.32; 95 % CI: 2.09–25.67) showed that the **risk of PJIs was significantly higher in the BMI≥40 group than that in the BMI<30 group.** The pooled results of four prospective studies showed that the **incidence of PJIs in overweight patients was significantly higher than that in normal -weight patients** (RR=1.34; 95 % CI: 1.09–1.64). However, the pooled result of retrospective studies showed no significant difference between overweight patients and normal patients in the incidence of PJIs (RR=1.23; 95 % CI:	NOS was used to assess methodological quality of studies included. Definition Normal: 18.5<BMI<25; Obese: 30≤BMI<40 Overweight: 25<BMI<30	Critically low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
						0.39–3.91). The pooled result of six prospective studies showed that the **risk of PJIs was significantly higher in obese patients** (RR=1.52; 95 % CI: 1.21–1.90) **than in normal individuals**, but no significant difference was observed in the retrospective pooled result (RR=1.46; 95 % CI: 0.54–3.92).			
Ponnusamy (266)	MA	August 2016	33	THA	Functional scores, reoperations, and aseptic and septic revisions	**The morbidly obese and super-obese groups were at an increased risk for revision, especially for septic revisions, compared with the non-obese group.** The severely obese group had risk ratios of 1.40 (95% CI: 0.97-2.02) for revision (five studies), 0.70 (95% CI: 0.45-1.10) for aseptic revision (one study), and 3.17 (95% CI: 2.25-4.47) for septic revision (five studies). Morbidly obese patients had risk ratios of 2.01 (95% CI: 1.81-2.23) for revision (eight studies), 1.40 (95% CI: 0.84 to 2.32) for aseptic revision (six studies), and 9.75 (95% CI: 3.58-26.59) for septic revision (12 studies). Super-obese patients had risk ratios of 2.62 (95% CI: 1.68-4.07) for revision (five studies), 1.98 (95% CI: 0.80-4.94) for aseptic revision (four studies), and 7.22 (95% CI: 1.51-34.60) for septic revision (four studies). There was **no significant difference** in the standardized mean difference **of functional outcome scores between the severely obese cohort, the morbidly obese cohort, and the super-obese** cohort.	Quality assessment of the studies was performed with Risk of Bias in Non-Randomized studies of interventions (ROBINS-I) Definitions Obese: BMI > 35 kg/m^2; Morbidly obese: BMI > 40 kg/m^2; Super-obese: BMI > 50 kg/m^2; non-obese: BMI < 25 kg/m^2	Critically low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Pozzobon (319)	MA	January 2017	31	THA, TKA	Pain, disability, quality of life, complications after arthroplasty	THA only **Non-obese participants** have **significantly less short-term postsurgical hip pain** (pooled SMD of two studies −0.34; 95% CI −0.67 to −0.02); **long-term postsurgical hip disability** (pooled SMD of six studies -0.35; 95% CI: -0.44 to -0.26), and are **less likely to develop infections** (pooled odds ratio of seven studies 0.33; 95% CI: 0.19-0.59). At **long term** there was **no difference** between groups **for hip pain** (pooled SMD of two studies −0.32; 95% CI −0.84 to 0.20) and for **short-term postsurgical hip disability** (pooled SMD of three studies −0.09; 95% CI −0.39 to 0.20). No meta-analysis was performed for quality of life due to few data.	Definition obese group BMI > 30 kg/m^2 and a non-obese group BMI < 30 kg/m^2 Short-term: less than 6 month Long-term: 6 month or longer NOS was used to assess methodological quality of studies included.	Low	2+
Smith (320)	MA	November 2015	5	THA, TKA	Bariatric surgery	There was no statistically significant difference in outcomes such as **superficial wound infection** (relative risk: 1.88; 95% CI: 0.95-0.37), **deep wound infection** (RR 1.04; 95% CI 0.65-1.66), **deep vein thrombosis** (RR 0.57; 95% CI: 0.13-2.44), **pulmonary embolism** (RR 0.51; 95% CI: 0.03-8.26), **revision surgery** (RR 1.24; 95% CI: 0.75-2.05) or **mortality** (RR 1.25; 95% CI: 0.16-9.89) **between patients who had undergone bariatric surgery compared who had not.** A **reduced risk** was found for **wound infection** (pooled relative risk of two studies: 0.36; 95% CI: 0.15-0.19).	Study quality was assess with the Downs and Black Checklist. Evidence base was moderate.	Critically low	2+

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Yang (306)	MA	March 2017	6 studies (retrospective studies)	THA and TKA	PJI	**No significant difference** is found regarding **BMI condition** between groups (weighted mean difference of five studies:0.027; 95% CI: -0.487 to 0.541). There was no significant heterogeneity among these studies.	Methodological Index for Non-Randomized Studies (MINORS) Scale was used to assess methodological quality of studies included. Only high-quality studies were selected. Evidence quality for most outcomes was low.	Critically low	2+
Yuan (261)	MA	July 2012	20 observational studies	THA/ TKA other orthopedic surgeries	SSI	BMI difference between infection group and no infection: There is **evidence of an association** between the **obesity and surgical site infections risk in orthopedics surgery**. **Obesity had about twofold increased risk of surgical site infections risk** in orthopedics. In arthroplasty surgery subgroup, the pooled weighted mean difference (of five studies) was 0.32 (95% CI: 0.2-0.5). In arthroplasty surgery subgroup, the infection rate was 4.1% (301/ 7330) in obesity group and 3.2% (2602/82344) in no obesity group; the pooled relative risk (of 11 studies) was 1.8 (95% CI: 1.4-2.3).	NOS was used to assess methodological quality of studies included. Definition obesity: ≥ 30 BMI kg/m^2	Critically low	2+

Notes: CI - Confidence Interval, MA - Meta-Analysis, NOS - Newcastle Ottawa Scale, PJI - Periprosthetic Joint Infection, RR - Relative Risks, SMD - Standardized Mean Difference, SR - Systematic Review, SSI - Surgical Site Infection, THA - Total Hip Arthroplasty, TKA - Total Knee Arthroplasty, WMD - Weighted Mean Difference

A 30 - Evidenztabelle 5.1.4: Meta-Analysen zu ASB als Risikofaktor für das postoperative Outcome nach Hüft-TEP (in alphabetischer Reihenfolge)

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Gomez-Ochoa (321)	MA	1970-2017	11 observational studies (partly randomization to treatment)	TJA	SSI	**Prosthetic joint infection** was found to be **more common in patients in the ASB group** compared with the control group (pooled odds ratios of 11 studies: 2.38; 95% CI: 1.21– 4.67). In the **subgroup analysis** of studies that evaluated **only ASB patients**, in which **the risk of SSI was slightly higher** for the ASB group compared to those without a urine culture abnormality (pooled odds ratios of nine studies: 2.89; 95% CI: 1.36– 6.17). Four of the included articles described separate groups of treated and untreated bacteriuria, showing a **higher rate of infection in patients who were treated** compared with those who were untreated (1.7% vs. 1.1%, respectively), high-lighting the lack of benefit of treating this condition (pooled odds ratios of four studies: 0.82; 95% CI: 0.34–1.97).	NOS was used to assess study quality. Studies with at least 1 year follow-up were included.	Critically low	2+
Wang (322)	MA	September 2017	11 obersvational studies (partly randomization to treatment)	TKA, THA and hemiarthroplasty	SSI/ PJI	Compared with the control group, **PJI was more common in patients in the ASB group** (pooled relative risk of five studies: 2.87; 95% CI: 1.65-5.00). There was **no significant difference** between the **treated ASB and control groups** (pooled relative risk of three studies: 0.89; 95% CI: 0.36-2-20).	NOS was used to assess study quality.	Critically low	2+

Notes: ASB - Asymptomatic Bacterurie, MA - Meta-Analysis, NOS - Newcastle Ottawa Scale, SR - Systematic Review, SSI - Surgical Site Infection

A 31 - Evidenztabelle 5.1.5: Meta-Analyse zu Depression als Risikofaktor für das postoperative Outcome nach Hüft-TEP

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Podmore (304)	MA	May 2017	70 (observational studies)	THA and TKA	SSI, VTE, readmission to hospital within 90 days, short-term mortality within 90 days after surgery, function, health-related quality of life, pain, revisions, long-term mortality	**VTE** was **likely** in patients with depression (pooled odds ratio of two studies 1.15; 95% CI: 1.02-1.30). One study reported a **significant lower likelihood of short-term (within 90 days) mortality** (odds ratio 0.53; 95% CI: 0.32-0.88), four studies a **worse function after surgery** (pooled odds ratio 1.69; 95% CI: 1.26-2.28), one study a **higher risk for revision surgery** (odds ratio 1.40; 95% CI: 1.09-1.81) **in patients with depression.** There was **no significant association between depression and postoperative pain** (pooled odds ratio of three studies 1.22; 95% CI: 0.79-1.87) and **SSI** (pooled odds ratio of three studies 1.54; 95% CI: 0.64-3.69).	NOS was used to assess methodological quality of studies included. Studies with fewer than 100 participants were excluded.	Low	2+

Notes: AMSTAR - Assessment of multiple systematic reviews, CI - Confidence Interval, NOS - Newcastle Ottawa Scale, SSI - Surgical Site Infection, VTE - Venous Thromboembolism

A 32 - Tabelle 5.1.5: Empfehlungen (bzw. Rationalen) zu psychische Erkrankungen als Risikofaktor für das postoperative Outcome nach Hüft-TEP (in alphabetischer Reihenfolge)

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
AAOS (2017) (13)	Moderate strength evidence supports that mental health disorders, such as depression, anxiety, and psychosis, are associated with decreased function, pain relief, and quality of life outcomes in patients with symptomatic osteoarthritis if the hip who undergo total hip arthroplasty (THA).	Not reported	Moderate	Six studies Davis et al. 2006 (310) Duivenvoorden et al. 2013 (323) Gandhi et al. 2010 (313) Jämsen et al. 2013 (324) Judge et al. 2013 (311) Rolfson et al. 2009 (325)	Possible harms of implementation: it is possible that patients with mental health disorders will be denied access to the potential benefits of THA due to concerns regarding increased risk. Mental health disorders were assessed using a variety of validated tools including the SF-36 Mental Component Score, the depression/anxiety question on the EQ-5D and the HADS.	DELBI domain 3: 26/28 points DELBI domain 6: 6/8 points
2nd ICM (2019) (17)	Elective joint arthroplasty is contraindicated in patients with an infectious lesion in the ipsilateral extremity, until the infection is resolved. Total joint arthroplasty needs to be deferred in patients with uncontrolled conditions, such as diabetes, malnutrition, chronic kidney disease, as well as other diseases that are known to increase the risks of SSIs/PJIs. **Rationale Depression (Modifiable Risk factor):** Evidence suggested histories of depression and psychosis to be each associated with increased risks of PJIs after TJA.	Not reported	Not reported	Three studies Tan et al. 2016 (259) Bozic et al. 2012 (236) Bozic et al. 2012 (237)	Evidence strength: strong	DELBI domain 3: 21/28 points DELBI domain 6: 4/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung

A 33 - Leitliniensynopse 5.1.6: Empfehlungen (bzw. Rationalen) zu Anämie bei der Indikation zur Hüft-TEP

Guideline	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
2nd ICM (2019) (17)	**Elective joint arthroplasty is contraindicated in patients with an infectious lesion in the ipsilateral extremity**, until the infection is resolved. **Total joint arthroplasty needs to be deferred in patients with uncontrolled conditions, such as** diabetes, malnutrition, chronic kidney disease, as well as **other diseases** that are known to increase the risks of SSIs/PJIs. **Rationale - section Anemia (Modifiable):** Consistent evidence showed that preoperative anemia was associated with increased risks of PJIs/SSIs after TJAs.	Not reported	2+	Schairer et al. 2016 (326) Bozic et al. 2012 (236) Bozic et al. 2012 (237) Greenky et al. 2012 (327)	Strong consensus (90% agreed) Evidence strength: strong	DELBI domain 3: 21/28 points DELBI domain 6: 4/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, SSI – Surgical Site Infection, PJI - Periprosthetic Joint Infection

A 34 - Evidenztabelle 5.1.6: Anämie als Risikofaktor für das postoperative Outcome nach Hüft-TEP (in alphabetischer Reihenfolge)

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Alsaleh (328)	MA	June 2012	26 RCTs	THA, TKA	Need for allogeneic blood transfusion (ABT), hemoglobin at discharge, thromboembolic Events	**Use of preoperative Erythropoiesis-stimulating agents** (ESAs) **reduced ABT** in patients undergoing hip or knee surgery (pooled relative risk of 25 RCTs: 0.48; 95% CI: 0.38 - 0.60). **ESAs resulted in higher hemoglobin levels at discharge** when compared to the control group (21 RCTs mean difference: 7.30 g/L (range: 4.81 - 9.79)). **No difference in the risk of developing venous-thromboembolism** between the ESA group and the control groups (pooled relative risk of 19 RCTs: 1,04; 95% CI: 0,65 - 1,67).	Quality appraisal: Cochrane Collaboration's tool for assessing risk of bias in randomized trials. The overall strength of the evidence is "heterogeneous".	Critically low	1-
Li (329)	MA	November 2017	25 RCT´s	Orthopedic surgeries	Primary outcome: number of patients exposed to allogeneic transfusion Secondary outcome: mean number of allogeneic RBC units transfused and the level of Hb during the preoperative period	Comparing EPO group with the control group, the **use of EPO resulted in a lower proportion of patients who needed ABT** (pooled odds ratio of seven studies: 0.41; 95% CI: 0.28 – 0.60) and **lower volumes of allogeneic blood transfused** (pooled odds ratio of seven studies: -0.45; 95% CI: -0.68 – 0.21). After taking all studies into consideration, EPO could reduce the exposure to ABT (pooled odds ratio of 36 studies: 0.42; 95% CI: 0.33 – 0.55) and reduce the average volume of ADT (OR = -0.28; 95% CI -0.46 to -0.10).	Quality appraisal: Cochrane Collaboration's tool for assessing risk of bias in randomized trials. The overall strength of the evidence is "heterogeneous".	Critically low	1-

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
						No matter what time was tested the **value of Hb, using EPO contributed to a higher level of Hb with or without use of PABD** (p<0.0001) which means EPO could increase the level of Hb significantly during the perioperative period. **No significant differences** with or without use of EPO and **risk of VTE** in EPO group and PABD group.			
Voorn (330)	MA	April 2014	7 RCT´s	THA, TKA	Effects of Erythropoietin (EPO)	**In THA, EPO significantly reduced exposure to allogeneic transfusion** (pooled risk ratio of six studies: 0.45; 95% CI: 95% CI 0.33 – 0.61). **In THA and TKA, EPO reduced the exposure rate** by 54% compared with controls (pooled risk ratio of seven RCTs: 0.46; 95% CI: 0.44 – 0.80). **In THA and TKA**, analysis of the **thromboembolic and vascular adverse events** showed that the **use of EPO did not lead to an increase of events** (pooled risk ratio of seven studies: 1.14; 95% CI: 0 71 - 1 84).	Quality appraisal: Cochrane Collaboration's tool for assessing risk of bias in randomized trials The overall strength of the evidence using the GRADE approach is "high".	Critically low	1-
Yang (331)	MA	May 2011	6 RCT´s	THA, TKA and hip fracture related surgery	Therapeutic effects of iron on the hemoglobin level, adverse effects	Therapeutic effects of iron on the hemoglobin level: statistically significant **difference between iron treatment and no iron treatment** (pooled weighted mean difference of six studies: 2.81; 95% CI: 0.7–4.91).	Guidelines of the Cochrane Collaboration Back Review Group: 11 internal validity criteria related to selection bias, performance bias, attrition bias and detection bias.	Critically low	1-

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
						Adverse effects: **iron application did not increase the rate of adverse effects** compared with the placebo.	The overall strength of the evidence is "moderate".		
Zhao (332)	MA	Dezember 2015	15 RCT´s	THA, TKA	Use of erythropoietin (EPO), preoperative autologous blood donation (PABD)	Reduced exposure to **allogeneic blood transfusion** (pooled odds ratio of 14 studies: 0.41; 95% CI: 0.28 – 0.60) but there was **no significant difference in the average volume of allogeneic blood transfused** (p=0.10). In the subgroup: EPO vs. no EPO: **EPO was associated with a lower proportion of patients who needed allogeneic blood transfusion** (pooled Odds Ratio of four studies: 0.30; 95% CI: 0.18 – 0.49). In the **comparison between EPO and PABD versus PABD alone**, use of EPO was associated with higher hemoglobin level after surgery (pooled odds ratio of 11 studies: 0.86; 95% CI: 0.61 – 1.11).	Quality appraisal with Cochrane Collaboration's tool for assessing risk of bias in RCTs. The overall strength of the evidence is "heterogeneous".	Critically low	1-

Notes: AMSTAR - A Measurement Tool for the Assessment of Multiple Systematic Reviews, CI - Confidence Interval, NOS - Newcastle Ottawa Scale, MA - Meta-Analysis, PJI - Periprosthetic Joint Infection, SIGN - Scottish Intercollegiate Guidelines Network, SR - Systematic Review, THA - Total Hip Arthroplasty, TKA - Total Knee Arthroplasty, VTE - Venous Thromboembolism, WMD - Weighted Mean Difference

A 35 - Tabelle 5.1.7: Empfehlungen (bzw. Rationalen) zu IACI bei Coxarthrose vor Hüft-TEP-Operation

Guideline (year)	Recommendation	Grade of recommendation	Evidence level	Literature references	Comments	Critical appraisal
2nd ICM (2019) (17)	Elective joint arthroplasty is contraindicated in patients with an infectious lesion in the ipsilateral extremity, until the infection is resolved. Total joint arthroplasty needs to be deferred in patients with uncontrolled conditions, such as diabetes, malnutrition, chronic kidney disease, as well as other diseases that are known to increase the risks of SSIs/PJIs. **Rationale - Intraarticular Injections** There is strong evidence that surgery should be absolutely delayed for a minimum of 3 months after intraarticular steroid injections.	Not reported	Not reported	Charalambous et al. 2014 (333) Wang et al. 2014 (334) Pereira et al. 2016 (335) McMahon et al. 2013 (336) Cancienne et al. 2015 (337) Chambers et al. 2017 (338) Schairer et al. 2016 (326) Jämsen et al. 2010 (339) Lindeque et al. 2014 (340) Gundtoft et al. 2015 (341)	Evidence strength: strong	DELBI domain 3: 21/28 points DELBI domain 6: 4/8 points

Notes: DELBI - Deutsches Instrument zur methodischen Leitlinien-Bewertung, PJI - Periprosthetic Joint Infection, SSI - Surgical Site Infection

A 36 - Evidenztabelle 5.1.7: Meta-Analysen zu IACI bei Coxarthrose als Risikofaktor für das postoperative Outcome nach Hüft-TEP (in alphabetischer Reihenfolge)

Study	Type of study	Search period (up to)	Included studies	Intervention	Outcomes/ Predictors	Results	Comments	AMSTAR rating	Evidence level (SIGN)
Charalambous (333)	MA	February 2014	8 retrospective cohort studies	THA, TKA	Deep infection rate, previous joint infection	THA results only Steroid injection prior to THA had **no significant effect on either deep infection rates** (pooled risk ratio of five studies 1.59; 95% CI: 0.66–3.83) o**r superficial infection rates** (pooled risk ratio of 1.91; 95% CI: 0.48–7.56).	The methodological index for non-randomized studies (MINORS) were used to assess study quality.	Critically low	2+
Kunutsor (260)	MA	September 2015	66 longitudinal studies (23 prospective cohort and 43 retrospective cohort or case-control)	Total Joint Arthroplasty	PJI	The **risk for intra-articular steroid injection** versus no intra-articular steroid injection was **non-significantly increased** (pooled relative risk of three studies 4.03; 95%b CI 0.75-21.80).	NOS was used to assess methodological quality of studies included Only longitudinal studies with at least one-year follow-up were included	Moderate	2++
Meng (342)	MA	November 2015	11 retrospective studies	THA, TKA	Infection risk	THA results only A subgroup analysis for THA shows a **non-significant increased risk** (pooled relative risk of six studies 1.61; 95% CI: 0.96-2.72)	The Newcastle Ottawa Scale was used to assess study quality.	Critically low	2+
Xing (343)	MA	August 2014	8 retrospective cohort studies	THA, TKA	Deep infection rate, superficial infection rate	Patients with steroid injection before arthroplasty had a **higher deep infection rate** than patients without steroid injection (pooled odds ratio of eight studies 2.13; 95% CI: 1.02-4.45), but **no significant effect on superficial infection rate** (pooled odds ratio of six studies 1.75; 95% CI: 0.74-4.16)	The methodological index for non-randomized studies (MINORS) were used to assess study quality.	Critically low	2+

Notes: AMSTAR - A Measurement Tool for the Assessment of Multiple Systematic Reviews, CI - Confidence Interval, MA - Meta-Analysis, Minors - Methodological index for non-randomized studies, NOS - Newcastle Ottawa Scale, PJI - Periprosthetic Joint Infection, SIGN - Scottish Intercollegiate Guidelines Network, THA - Total Hip Arthroplasty, TKA - Total Knee Arthroplasty

Anlage 5: Ergebnisse der Interessenkonflikterklärungen

Im Folgenden sind die Interessenerklärungen als tabellarische Zusammenfassung dargestellt sowie die Ergebnisse der Interessenkonfliktbewertung und Maßnahmen, die nach Diskussion der Sachverhalte von der der LL-Gruppe beschlossen und im Rahmen der Konsenskonferenz umgesetzt wurden.

	Berater- bzw. Gutachter-tätigkeit	Mitarbeit in einem Wissenschaftlichen Beirat (advisory board)	Bezahlte Vortrags- oder Schulungstätigkeit	Bezahlte Autoren- oder Co-Autorenschaft	Forschungsvorhaben/ Durchführung klinischer Studien	Eigentümerinteressen (Patent, Urheberrecht, Aktienbesitz)	Indirekte Interessen	Von COI betroffene Themen der Leitlinie[1], Einstufung bzgl. der Relevanz, Konsequenz
Prof.Dr.med. Martin Aringer	keiner	diverse – kein Hüft-TEP-Bezug	diverse – keine Prothesen-hersteller	Chugai Roche Sanofi	diverse – keine Prothesen-hersteller	keiner	Dt. Gesellschaft für Rheumatologie, Selbsthilfegemeinschaft Lupus erythemtodes	keiner
Dr.med. Hartmut Bork	keiner	Alley, Value-based Management care GmbH (VBMC) - keine Prothesenhersteller	diverse – keine Prothesen-hersteller	keiner	keiner	keiner	DGOOC, DGOU, BVOU	keiner
Prof.Dr.med. Karsten E. Dreinhöfer	keiner	AMGEN - keine Prothesen-hersteller	AMGEN, BMG, Janssen, Zimmer	keiner	AMGEN	keiner	BVOU, GMUSC, GRA, DNVF, DGOOC, EFORT, BMEP	geringer 1) direkt erhaltene Aufwandsentschädigungen für Vorträge und Schulungen mit Hüft-TEP-Bezug
Dr.med. Natascha Einhart	keiner	keiner	keiner	keiner	keiner	keiner	DEGAM	keiner
Prof.Dr.med. Rüdiger von Eisenhart-Rothe	Stryker, Johnson& Johnson, AQ	Lima Medicalpark	AE, DKG	keiner	Johnson& Johnson, AQ	keiner	DHG, DKG, AE	relevanter keine Abstimmung Empfehlungen 1.7, 2.3, 3.3, 4.4, 4.5, 5.1, 5.1.1, 5.1.2 und 5.1.3
Corinna Elling-Audersch	keiner	keiner	La Roche Vortrag – kein Hüft-TEP-Bezug	keiner	keiner	keiner	Dt. Rheuma-Liga e.V. Bundesverband	keiner

	Berater- bzw. Gutachter-tätigkeit	Mitarbeit in einem Wissenschaftlichen Beirat (advisory board)	Bezahlte Vortrags- oder Schulungstätigkeit	Bezahlte Autoren- oder Co-Autorenschaft	Forschungsvorhaben/ Durchführung klinischer Studien	Eigentümerinteressen (Patent, Urheberrecht, Aktienbesitz)	Indirekte Interessen	Von COI betroffene Themen der Leitlinie[1], Einstufung bzgl. der Relevanz, Konsequenz
PD Dr.med. Stefan Fickert	keiner	BAUERFEIND – kein Hüft-TEP-Bezug	keiner	MIT – kein Hüft-TEP-Bezug	TETEC– kein Hüft-TEP-Bezug	keiner	ISHA, ESSKA, QKG, AGA	keiner
Dr. med. Melanie Foerder	keiner	keiner	keiner	keiner	keiner	keiner	keiner	keiner
Prof.Dr.med. Niklaus Friederich	Deutsche Arthrosehilfe e.V., Stryker Leibinger GmbH	Dept. Biomedical Engineering, Universität Basel	Master of Advanced Studies in Functional Kinetic Science, Universität Basel	diverse Artikel	MIRACLE Projekt Universität Basel	keiner	Dt. Arthrosehilfe e.V., AGA, FMH, ESSKA, GOTS, AOSSM, ACL-Study Group, ISAKOS, APKASS	relevanter keine Abstimmung Empfehlungen 1.7, 2.3, 3.3, 4.4, 4.5, 5.1, 5.1.1, 5.1.2 und 5.1.3
Ute Garske	keiner	Novartis – kein Hüft-TEP-Bezug	keiner	keiner	keiner	keiner	Dt. Rheuma-Liga LV Hamburg e.V.	keiner
Prof.Dr.med. Ralph Gaulke	keiner	keiner	med update GmbH, Rheumaakademie	keiner	KlinStrucMed-Programm	keiner	Dt. Gesellschaft für orthopädische Rheumatologie, DGOU, DGU, DGOOC, DGORh, DGH, D.A.F., DHV regionales Rheuma-zentrum Hannover	keiner
Prof.Dr.med. Erika Gromnica-Ihle	AbbVie Deutschland GmbH	Sanofi-Aventis GmbH	Roche Pharma AG, Novartis Pharma GmbH, Rheuma-tolog. Fortbildungsakademie GmbH	keiner	keiner	keiner	Dt. Rheuma-Liga e.V., Dt. Ges. für Rheumatologie	keiner
Prof.Dr.med. Klaus-Peter Günther	keiner	keiner	ZimmerBiomet, AE, OrthoTrauma Update	Orthopädie & Unfallchirurgie Up2date	ZimmerBiomet, Stiftung Endoprothetik	keiner	DGOU, European Federation of Orthopaedics and Traumatology (EFORT), EPRD, Zertifizierungs-kommission EndoCert der	gering 1) direkt erhaltene Aufwandsentschädigungen für Vorträge und Schulungen mit Hüft-TEP-Bezug

	Berater- bzw. Gutachter-tätigkeit	Mitarbeit in einem Wissenschaftlichen Beirat (advisory board)	Bezahlte Vortrags- oder Schulungstätigkeit	Bezahlte Autoren- oder Co-Autorenschaft	Forschungsvorhaben/ Durchführung klinischer Studien	Eigentümerinteressen (Patent, Urheberrecht, Aktienbesitz)	Indirekte Interessen	Von COI betroffene Themen der Leitlinie[1], Einstufung bzgl. der Relevanz, Konsequenz
							DGOOC, European Hip Society	2) indirekt erhaltene Forschungsgelder (an die Institution) für Forschungsprojekte mit Hüft-TEP-Bezug
Dr.med. Holger Haas	Aesculap , Link	ValueBasedManagedCare GmbH DePuy Synthes	Aesculap, Implantcast, Link Merete, Smith & Nephew, Dt. Ges. für Endoprothetik	EndoCert	B.Braun, Fa. Aesculap, Fa. Link	keiner	Dt. Ges. für Endoprothetik, DGOOC, EndoCert	relevanter keine Abstimmung Empfehlungen 1.7, 2.3, 3.3, 4.4, 4.5, 5.1, 5.1.1, 5.1.2 und 5.1.3
Prof.Dr.med. Karl Heller	Aesculap, Zimmer Biomet	Smith&Nephew	Aesculap, CeremTec	diverse	Aesculap, ZimmerBiomet	Aktien Conformis, Johnson& Johnson	DGOOC, DGOU	relevanter keine Abstimmung Empfehlungen 1.7, 2.3, 3.3, 4.4, 4.5, 5.1, 5.1.1, 5.1.2 und 5.1.3
Prof. Dr. Daniela Holle	keiner	keiner	Hamburger Fernhochschule, Universitäe Witten/Herdecke, Malteser Erasmus	keiner	keiner	keiner	DGP, EANS, INTERDEM, Graduierten Institut NRW	keiner (keine Teilnahme an der Konsenskonferenz)
Prof.Dr.med. Jörg Jerosch	keiner	keiner	keiner	keiner	keiner	Royalties von der Firma Corin	keiner	relevanter keine Abstimmung Empfehlungen 1.7, 2.3, 3.3, 4.4, 4.5, 5.1, 5.1.1, 5.1.2 und 5.1.3
Dr. rer. nat. Ulrike Kaiser	keiner	keiner	diverse – keine Prothesen-hersteller	keiner	diverse – keine Prothesen-hersteller	keiner	International Association for the Study of pain, Dt. Schmerzgesellschaft, Dt. Ges. für Schmerzpsychotherapie und forschung	keiner
PD Dr.med. Stephan Kirschner	keiner	keiner	keiner	keiner	keiner	keiner	DGOU, AE, Mdk Westfalen Lippe	keiner

	Berater- bzw. Gutachter-tätigkeit	Mitarbeit in einem Wissenschaftlichen Beirat (advisory board)	Bezahlte Vortrags- oder Schulungstätigkeit	Bezahlte Autoren- oder Co-Autorenschaft	Forschungsvorhaben/ Durchführung klinischer Studien	Eigentümerinteressen (Patent, Urheberrecht, Aktienbesitz)	Indirekte Interessen	Von COI betroffene Themen der Leitlinie[1], Einstufung bzgl. der Relevanz, Konsequenz
Prof.Dr.med. Bernd Kladny	keiner	keiner	diverse Vorträge für Fachgesellschaften/ Gesundheitspolitik	keiner	keiner	keiner	DGOU, BVOU, DHG, DGC, DGOOC	keiner
Prof.Dr. Christian Kopkow	keiner	keiner	keiner	keiner	keiner	keiner	DGPTW, DNVF	keiner
Marianne Korinth	keiner	keiner	keiner	keiner	keiner	keiner	Dt. Rheuma-Liga e.V. Bundesverband	keiner
Dr.med. Michael Kremer	keiner	keiner	Merete, Brehm, Link, DePuy	keiner	keiner	keiner	AE, ComGen	gering 1) direkt erhaltene Aufwandsentschädigungen für Vorträge und Schulungen mit Hüft-TEP-Bezug
Dorothee Krug	keiner	EPRD	Edwards Lifescience	keiner	keiner	keiner	EC des EPRD	keiner (keine Teilnahme an der Konsenskonferenz)
Dr.med. Vincent Justus Leopold	keiner	keiner	keiner	keiner	keiner	keiner	DGOU, BVOU	keiner
Dipl.-Psych. Maike Linke	Studiengang “Master of medical education“ Heidelberg	keiner	Studiengang “Master of medical education“ Heidelberg	keiner	keiner	keiner	DGMP, GMA	keiner
Prof.Dr.med. Jörg Lützner	ClarCert	Pfizer – kein Hüft-TEP-Bezug	Aesculap, Link, Mathys, Pfizer, AE	keiner	ZimmerBiomet, Aesculap, Arthrosehilfe,	keiner	Dt. Gesellschaft für Endoprothetik, ComGen Präsident	gering

	Berater- bzw. Gutachter-tätigkeit	Mitarbeit in einem Wissenschaftlichen Beirat (advisory board)	Bezahlte Vortrags- oder Schulungstätigkeit	Bezahlte Autoren- oder Co-Autorenschaft	Forschungsvorhaben/ Durchführung klinischer Studien	Eigentümerinteressen (Patent, Urheberrecht, Aktienbesitz)	Indirekte Interessen	Von COI betroffene Themen der Leitlinie[1], Einstufung bzgl. der Relevanz, Konsequenz
			(alle kein Hüft-TEP-Bezug)		Link, Mathys, Smith&Nephew Stryker, ZimmerBiomet			2) indirekt erhaltene Forschungsgelder (an die Institution) für Forschungsprojekte mit Hüft-TEP-Bezug
Dr.med. Jürgen Malzahn	keiner	keiner	AAa Implantate, Depuy, ZimmerBiomet	keiner	keiner	keiner	AOK-Bundesverband, Mitwirkung in Entscheidungsgremien der Selbstverwaltung des Gesundheits-wesens, stellvertretender Sprecher des Exekutivkomitees des EPRD	gering 1) direkt erhaltene Aufwandsentschädigungen für Vorträge und Schulungen mit Hüft-TEP-Bezug
Dr.med. Ursula Marschall	keiner	keiner	keiner	keiner	keiner	keiner	DGSS, DGAI	keiner
PD Dr.med. Anne Postler	keiner	keiner	keiner	keiner	keiner	keiner	DGOU, AE, VKO	keiner
PD Dr.med. Eric Röhner	Serag Wiessner	keiner	keiner	keiner	keiner	keiner	DGU, AE, DKG	keiner
Prof.Dr.med. Susanne Schwarzkopf	keiner	keiner	keiner	keiner	keiner	keiner	keiner	keiner
Sandra Schwenner	keiner	keiner	keiner	keiner	keiner	keiner	keiner	keiner (keine Teilnahme an der Konsenskonferenz)
Nicht stimmberechtigte Mitglieder der Leitliniengruppe								
Stefanie Deckert	keiner	keiner	keiner	keiner	keiner	keiner	keiner	keiner
Toni Lange	keiner	keiner	keiner	keiner	keiner	keiner	keiner	keiner
Dr. Cornelia Lützner	keiner	keiner	keiner	keiner	keiner	keiner	keiner	keiner

	Berater- bzw. Gutachter-tätigkeit	Mitarbeit in einem Wissenschaftlichen Beirat (advisory board)	Bezahlte Vortrags- oder Schulungstätigkeit	Bezahlte Autoren- oder Co-Autorenschaft	Forschungsvorhaben/ Durchführung klinischer Studien	Eigentümerinteressen (Patent, Urheberrecht, Aktienbesitz)	Indirekte Interessen	Von COI betroffene Themen der Leitlinie[1], Einstufung bzgl. der Relevanz, Konsequenz
Prof. Dr.med. Jochen Schmitt	keiner	keiner	keiner	keiner	keiner	keiner	DNVF, Versorgungs- und Qualitätsforschung	keiner

[1] In die tabellarische Zusammenfassung wurden hier nur die Angaben übertragen, für die nach Diskussion und Bewertung der vollständig entsprechend Formblatt der AWMF offengelegten Sachverhalte in der Leitliniengruppe ein thematischer Bezug zur Leitlinie festgestellt wurde. Die vollständigen Erklärungen sind im Leitliniensekretariat hinterlegt.

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